

NORTH-WEST TERRITORIES. COUNCIL OF
PUBLIC INSTRUCTION.

Report of the Council of Public
Instruction of the NWT of Canada to-
gether with the report of the Super-
intendent of Education and Appendices,
1896. Regina, Queen's Printer, 1897.

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Council of Public Instruction

OF THE

NORTH-WEST TERRITORIES OF CANADA

TOGETHER WITH THE REPORT OF THE

SUPERINTENDENT OF EDUCATION

AND

UNIVERSITY OF ALBERTA

APPENDICES

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1896

PUBLISHED BY AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

REGINA

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REPORT
OF THE
Council of Public Instruction
OF THE
NORTH-WEST TERRITORIES OF CANADA
TOGETHER WITH THE REPORT OF THE
SUPERINTENDENT OF EDUCATION
AND
APPENDICES

1896

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*To the Honourable Charles Herbert Mackintosh,
Lieutenant-Governor of the North-West Territories.*

MAY IT PLEASE YOUR HONOUR:

I herewith present the Report of the Council of Public Instruction for the year 1896, together with the Report of the Superintendent of Education, and Appendices.

I have the honour to be,

Your Honour's Obedient Servant,

F. W. G. HAULTAIN,
Chairman Council of Public Instruction.

REGINA, *September, 1897.*

With the Compliments of.....

The Council of Public Instruction.

This copy of the Report of the Council is forwarded
to the Secretary of the Board of Trustees for filing and
preservation for the benefit of Trustees and Teachers
and their successors. : : : : : : : : :

Summary of Statistics for 1896.

I.—NUMBER OF SCHOOLS.

| | |
|---|-----|
| 1. Number of Schools in operation—Public 357, Separate 9. | |
| Total..... | 366 |
| Increase for the year—Public 26. | |
| Decrease for the year—Separate, 1. | |
| Increase..... | 25 |
| 2. Number of new school districts proclaimed..... | 40 |
| Public, 39; Separate, 1. | |

II.—ENROLLMENT

| | |
|-----------------------------------|-------|
| 1. Number of pupils enrolled..... | 12796 |
| Increase for the year..... | 824 |
| Public Schools { Boys, 6285. | |
| Girls, 5860. | |
| Total...12145 | |
| Increase for the year..... | 917 |
| Separate Schools { Boys, 292. | |
| Girls, 359. | |
| Total...651. | |
| Decrease for the year..... | 93 |

III.—TEACHERS, CERTIFICATES AND SALARIES.

| | |
|---|-------------|
| 1. Number of teachers employed—Public 417, Separate 16. | |
| Total..... | 433 |
| Increase for the year..... | 32 |
| 2. Number of men employed, 211; increase, 20. | |
| 3. Number of women employed, 222; increase 12. | |
| 4. Number of teachers with First Class Certificates, men, | |
| 62; women, 34. Total..... | 96 |
| Increase for the year..... | 13 |
| 5. Number of teachers with Second Class Certificates, men | |
| 98; women, 109. Total..... | 207 |
| Increase for the year..... | 62 |
| 6. Number of teachers with Third Class Certificates (in- | |
| cluding provisional licences)—men 51; women 79. | |
| Total..... | 130 |
| Decrease for the year..... | 43 |
| 7. Salaries paid teachers { Public, \$163674 13 | |
| Separate, 8932 49 Total .. | \$172606 62 |
| Increase for the year.... | \$8482 95 |

IV.—COST OF SCHOOLS.

| | |
|---|--------------|
| Total expenditure by Legislative Assembly (Office expenditure included) | \$ 126218 21 |
| Increase for the year | \$14035 31 |
| Total expenditure (Assembly Grants and local taxes) as shown by Trustees' Annual Returns..... | 274647 98 |
| Increase for the year | \$23775 19 |

V.—SUMMARY OF THE EDUCATIONAL STATISTICS OF THE TERRITORIES
SINCE 1885, WHEN THE MANAGEMENT OF THE SCHOOLS
WAS VESTED IN A BOARD OF EDUCATION.

| YEAR. | SCHOOLS IN OPERATION. | PUPILS ENROLLED. | TEACHERS EMPLOYED. | EXPENDITURE BY LEGISLATIVE ASSEMBLY |
|-------|-----------------------|------------------|--------------------|-------------------------------------|
| 1886 | 76 | 2553 | 84 | \$ 8908 72 |
| 1887 | 111 | 3144 | 125 | 36897 47 |
| 1888 | 131 | 3453 | 150 | 44547 06 |
| 1889 | 164 | 4574 | 183 | 56984 63 |
| 1890 | 195 | 5398 | 224 | 85002 55 |
| 1891 | 213 | 5652 | 248 | 129042 01 |
| 1892 | 249 | 6170 | 295 | 121056 94 |
| 1893 | 262 | 8214 | 307 | 106578 59 |
| 1894 | 300 | 10721 | 353 | 113999 85 |
| 1895 | 341 | 11972 | 401 | 112182 90 |
| 1896 | 366 | 12796 | 433 | 126218 21 |

The Educational System of the North-West Territories is under the control (within its attributes) of a Council of Public Instruction, consisting of the four members of the Executive Committee, and four appointed members—two Protestants and two Roman Catholics—without votes. The provisions of The School Ordinance 1896, in this respect are :—

The members of the Executive Committee of the Territories, and four persons, two of whom shall be Protestants and two Roman Catholics, appointed by the Lieutenant-Governor in Council, shall constitute a Council of Public Instruction, and one of the said Executive Committee, to be nominated by the Lieutenant-Governor in Council, shall be Chairman of the said Council of Public Instruction. The appointed members shall have no vote, and shall receive such remuneration as the Lieutenant-Governor in Council shall provide.

(1) The Executive Committee, or any sub-committee thereof appointed for that purpose, shall constitute a quorum of the Council of Public Instruction, but no general regulations respecting :

(a) The management and discipline of schools ;

- (b) The examination, grading and licensing of teachers ;
- (c) The selection of books ;
- (d) The inspection of schools ;
- (e) Normal training ;

shall be adopted or amended except at a general meeting of the Council of Public Instruction duly convened for that purpose.

It shall be the duty of the Council of Public Instruction :

- (a) To make regulations for the government and discipline of schools and institutes, and for the training and certification of teachers ;
- (b) To prescribe programmes of study and text books ;
- (c) To define by "Standards" the studies to be pursued in all schools, such standards to be numbered from I upwards, standards above standard V to be further denominated "High School Standards;"
- (d) To provide for the examination of persons other than teachers who may desire to enter professions or who may wish certificates of having completed courses of study in any school ;
- (e) To prepare suitable forms and give such instructions as may be necessary for making all reports and conducting all proceedings required by the Ordinance ;
- (f) To determine all cases of appeal, disputes, and complaints, arising from decisions of trustees or inspectors and to make such orders thereon as may be required ;
- (g) To make any provisions, not inconsistent with the Ordinance, that may be necessary to meet exigencies occurring under its operation.

SCHOOL DISTRICTS.

A school district comprises an area of not more than twenty-five square miles and must contain not less than four resident ratepayers and twelve children between the ages of five and sixteen, inclusive. Any three qualified ratepayers may petition for the formation of a school district and upon its proclamation the ratepayers therein may establish a school and elect trustees to manage it. These trustees have power to erect and equip buildings, engage certificated teachers, levy taxes and perform such other acts as may be necessary for the proper conduct of a school.

CLASSES OF SCHOOLS.

The classes of schools established are Public Schools and Separate Schools. The minority of the ratepayers in any organized public school district, whether Protestant or Roman Catholic, may establish a separate school therein, and in such case, the ratepayers establishing such Protestant or Roman Catholic separate school shall be liable only to assessments of such rates as they impose upon themselves in respect thereof. Any person who is legally assessed or assessable for a public school shall not be liable to assessment for any separate school established therein. Provision is made for Night Schools for pupils over fourteen years of age who are unable to attend school during the day.

MAINTENANCE OF SCHOOLS.

Schools are maintained by Legislative grants and by local taxation. The Legislative grants are fixed by Ordinance and the following are the provisions governing them :—

There shall be paid from and out of any moneys appropriated by the Legislative Assembly for schools, in aid of schools organized under and conducted according to the provisions of the Ordinance, Night Schools, Normal Schools and Teachers' Institutes excepted, an amount to be calculated as follows :

- (a) To each school having an average attendance of at least six pupils for the days during which it has been open in any term, a sum of \$1.40 for each day the school is open : Provided, that the total number of days in each year for which grants may become payable shall not exceed 210 ;
- (b) For every pupil in average daily attendance an additional amount of \$1.50 per school year of 210 days ;
- (c) To each school where a teacher is employed who holds a first-class professional certificate the sum of 20 cents for each day (not exceeding 210) in the year such teacher is actually engaged in teaching ; and to each school where a teacher holding a second class certificate is so employed, the sum of 10 cents for each day (not exceeding 210) in the year such teacher is actually engaged in teaching ;
- (d) To each school attaining a minimum grading upon the reports of its inspection, as prescribed by the Council of Public Instruction, on its efficiency in respect to buildings, equipment, government and progress, a sum not exceeding 15 cents nor less than 5 cents may be paid according to such grading, for each day (not exceeding 210) on which the school has been kept open during the year ;
- (e) To any high school complying with the provisions of the Ordinance and the regulations of the Council of Public Instruction, a special grant of seventy-five dollars per term ;

Provided, that in case the sum of the grants to be paid in any term under sub-sections (a), (b) and (c) of this section shall exceed 70 per centum of the salary actually earned by the teacher during that term, the amount of the grant under the aforementioned sub-sections shall be reduced to the amount of the said 70 per centum of salary paid ;

Provided further, that payment may be made in respect of the amounts earned under sub-sections (a), (b) and (c) of this section at the end of the terms closing on April 15, August 31 and December 31, on receipt of the return prescribed by the Council of Public Instruction and provided for in sub-section (1) of section 88 of the Ordinance ; but the grant earned by any school under sub-section (d) shall be paid only with the last payment of the year ;

Provided further, that in schools where more than one teacher is employed, each department shall rank as a school under the provisions of sub-sections (a) and (d) of this section, when the average attendance of the whole school shall at least equal 20 pupils to each teacher employed ; but no board of trustees shall engage an assistant teacher (expecting Government aid on that account) without having given the Council of Public Instruction at least three months' notice of their intention to do so and having received its approval ;

Provided further, that the amount or amounts shown in the treasurer's return, provided for in sub-section (1) of section 88 of the Ordinance, to be due to any teacher or teachers, shall be paid direct and proportionately to such teacher or teachers to the extent of the grant;

Provided further, that no grant shall be paid to any school district until the bond of the treasurer provided for in section 87 shall have been received and registered by the Council of Public Instruction;

Any school which has been closed on account of the absence of the teacher in attending a teachers' institute held by order of the Council of Public Instruction, shall be entitled to all grants as if the school had been actually in operation during such period. For the purpose of computing the grant for such period the average attendance for the week immediately preceding the closing of the school shall be deemed the actual attendance during the period it remains closed from this cause.

Upon the recommendation of the Council of Public Instruction the Lieutenant-Governor in Council may make a special grant to any school, whether organised according to law or not, out of the general revenue fund of the Territories.

Whatever additional sums may be necessary for the conduct of the school are raised by local taxation. Two sections of land (1280 acres), in each township are reserved and held in trust by the Dominion Government as school lands for aiding and promoting education. This means an endowment of about eleven million acres.

STUDIES.

In the Programme of Studies provision is made for the teaching of those subjects a knowledge of which is helpful in the transaction of business, the duties of citizenship, the care of the body, and the formation of moral character. This knowledge is needed by all and may be so presented as to be objectionable to none. The work in Latin, Greek, French and German, done in the High School departments is determined by the matriculation requirements of the Universities of Manitoba and Toronto. The Programme contains no syllabus of religious instruction. The character and, within a time-limit, the amount of religious instruction given in any school is determined by the trustees, who may be presumed to represent the desires of the ratepayers. Religious instruction is not allowed in any school until one half-hour previous to the closing in the afternoon, at which time such instruction as is permitted by the trustees may be given, parents having the privilege of withdrawing their children at that hour or having them remain without taking part. It is, however, permissible for the trustees to direct that the school be opened by the recitation of The Lord's Prayer.

In all Standards above II the text-books are uniform, care being taken to authorise none written from a sectarian standpoint. In Standards I and II Roman Catholic Schools are permitted to use the Ontario Readers or the Dominion Series (Sadlier's Catholic Readers). In districts where French is the vernacular the trustees may, upon obtaining the consent of an Inspector, use the Bilingual Readers, Parts I and II, and the Second instead of the Ontario or Dominion Series.

TEACHERS.

Teachers receive their academic training in the high school departments of Public Schools and their professional training in the Normal Schools. Under certain limitations graduates of Universities and holders

of certificates of the first or second class obtained outside the Territories may receive permission to teach without further examination. No distinction is made between teachers in Public and Separate Schools. They have to pass the same academic examinations and undergo the same professional training. A non-professional certificate (academic) is not valid as a licence to teach. Local Normal Schools for the training of persons who have passed the academic test for third class are conducted at convenient local centres by the Territorial Inspectors from January 2nd to March 15th in each year. The Normal School for teachers of the first and second class is conducted in Regina. Students are given instruction in the theory, art and history of education and regular practice in teaching under careful supervision.

INSTITUTES.

During April, May and June in each year Teachers' Institutes are conducted by the Superintendent of Education assisted by the Inspectors. They are devoted to the further instruction of teachers in principles and methods of teaching, and the fostering of professional zeal and spirit. Public meetings in the evenings afford opportunities for directing the attention of citizens to the best means of promoting the welfare of the schools. Over ninety per cent. of the teachers voluntarily attend these institutes.

INSPECTION.

Inspectors are appointed by the Lieutenant-Governor in Council, and report to the Council of Public Instruction and the trustees of each district on the scholarship, behaviour and progress of the children, teaching and governing power of the teacher, condition of the buildings, grounds and apparatus, and state of the treasurer's books. They are expected to give any advice and instruction necessary for the successful conduct of the schools. They have nothing to do with religious instruction.

Report of the Superintendent of Education.

MR. F. W. G. HAULTAIN,

Chairman Council of Public Instruction.

SIR:—I have the honour to submit the following report for the year ending December 31, 1896.

The North-West Territories (Assiniboia, Saskatchewan and Alberta) cover an area of 302,000 square miles, embrace large farming, ranching, lumbering and mining regions, and contain amongst a widely distributed population a number of "colonies" established by different foreign nationalities. To carry on educational work successfully under such conditions is difficult, but while much remains to be accomplished the progress made during the past year gives us reason to be thankful and hopeful.

The increase in schools, pupils and teachers keeps pace with the growth of population. The classification of pupils shows that 43 per cent. of them are in Standard I, 21 per cent. in Standard II, 24 per cent. in Standard III, 7 per cent. in Standard IV, 3 per cent. in Standard V and less than 2 per cent. in the High School Standards; 88 per cent. do not proceed beyond Standard III. The conditions of life in a new country, and the demands of the farm, the ranch and the shop, account in the main for the early withdrawal from school of so many children. The importance of the education given in the first three Standards is greatly increased through this withdrawal. The scope and thoroughness of the work done in them, and the spirit in which it is performed, will be potent factors in shaping the characteristics of our future citizens.

The demand for teachers with higher qualifications continues. There has been an increase of thirteen First and sixty-two Second Class teachers, and a decrease of forty-three Third Class and provisionally certificated teachers. The ratio of men teachers is unusually large. Out of four hundred and thirty-three teachers employed, two hundred and eleven are men. The salaries (Appendix "D," Table V) compare favourably with those paid in the Provinces.

SCHOOL BUILDINGS.

In the erection of new buildings increased attention is given to those conditions which affect the health and comfort of the children. In too many of the older buildings little thought was given to proper lighting and less to ventilation. The light should come from the left side of the room, not from the right, and never from the front. If additional light be needed it should be admitted from the back. The window surface should be equal to one-fifth of the floor surface. The windows should extend to the ceiling, the sills being higher than the level of the children's heads when seated. Those through which the direct rays of the sun may fall upon the children should have light curtains. Both sashes should be adjusted by weights and pulleys.

In buildings heated with hot air furnaces the fresh warmed air should be admitted by a flue half-way to the ceiling and the impure air with-

drawn at the floor through openings connecting with a warmed ventilating shaft. In small buildings a jacketed stove should be used, fresh air being admitted from without through a flue opening under it. The impure air should escape at the floor through an opening into the chimney, which should have double flues—one for smoke and one for the escaping air.

An increase in blackboard accommodation is reported, but in many schools the supply is still insufficient. There should be a board at least four feet wide extending across the room in rear of the teacher's desk, with its lower edge not more than three feet above the floor or platform. Most boards are too high for small children to use with ease. At the lower edge of the board there should be a trough five inches wide for holding crayons and brushes. The teacher's effectiveness will be increased if an additional board occupies the right side of the room.

Most schools are furnished with patent desks. Single desks, though more expensive, are much more satisfactory than double ones. A few schools have home-made desks, generally badly constructed, and a danger to the health of the children condemned to use them.

More attention has been given to sweeping, dusting and scrubbing, but much remains to be done before school rooms will be as clean as the homes from which the children come. Unsanitary conditions which would not be tolerated in the home are permitted to continue in the schools through want of thought on the part of local officials.

The condition of the outhouses is improving. In many districts they are inspected daily by the teacher and swept and washed regularly. Privacy is secured by separate compartments properly screened. There are some buildings, however, in which little or no attention is paid to cleanliness, decency or privacy. The withholding of a portion of the grant in such cases would probably produce a better effect upon the authorities than the remonstrances of our inspectors have.

GROUND.

Were the school grounds fenced—and the cost of a plain fence sufficient to exclude cattle is but small—teachers would gladly assist in their permanent improvement and adornment. They could teach the children what varieties of trees flourish best here and assist in planting and caring for them. The Superintendent of our Experimental Farm supplies such trees and gives helpful advice as to their culture. The uses of trees for timber, fuel and shade, and their effects on climate and rainfall, could be presented and their beauty dwelt on. The Madeira, Hop and Wild Cucumber vines trained about the windows and porches, clumps of Rose bushes in the corners, and a bed of plants and flowers needed for Nature Study, would make an attractive spot of the now cheerless waste where the child spends so many of his waking hours. The reflex influence of such a school ground on the homes would be powerful. The school ought to be and can be a potent influence in the education of the people as to the value of the beautiful in human life.

It would be well to present in next Report a description of the best kept school ground in each inspectorate as an encouragement to those who are doing what they can, and as an example to others who have so far done nothing. There are little outlying rural districts where the care bestowed on the grounds far exceeds that given in the larger towns. Money is not so much needed as the intelligent, persistent effort of the few,

who appreciate the value of this work, to overcome the indifference of the many. *Arbour Day* is usually employed in removing the rubbish that accumulated during the winter, but comparatively little tree planting has been done.

ROOMS.

Progress has been made in beautifying the school rooms. Grasses, autumn leaves, wheat and oats, through variety of arrangement and diversity of colour, lend themselves to decorative effects. Corners of blackboards show gems of literature encompassed by scrolls or sprays, beauty in colour and form surrounding beautiful thoughts. In the windows are flowering plants. The teacher's table has its quiet cover, its vase of flowers and a well bound volume or two of her favorite authors. On the walls are prints of famous pictures and sculptures, and photographs of distinguished men. Such rooms appeal silently but powerfully to pupils, refining their tastes and elevating their ideals. As yet, but few of our children are subject to these influences. The country is young. For most, wealth is yet a potentiality. Material affairs engross the attention of the pioneer. But his children have to be prepared to live a life as well as to make a living. When for a few cents one can purchase a print of Raphael's *Sistine Madonna* or *St. Cecilia*, Guido Reni's *Aurora*, The *Laocoon*, Millet's *Angelus* or a study by Landseer, why should not a persistent effort be made to bring all children under the ennobling influence of good art, looking on it, not as a luxury, but as an essential in education; not as something for the leisure moment, but as a sweetener of toil and an interpreter of life? The effect of the majestic beauty of the *Sistine Madonna* is felt by little children long before its significance can be understood. Under the teacher's guidance a picture like a poem reveals its content, and the pupil perceives that it has an inner moral beauty as well as an outer sensual beauty, and feels and enjoys the spiritual suggestion in it. He who sees only peasants in a potato field when he looks at the *Angelus* needs to have his spiritual eyes opened that he may read the message of the artist. The aesthetic instinct, like the intellectual and the moral, is an original endowment, and entitled to culture. Let us not starve it, but aid its growth by surrounding the children with the best forms of beauty we can. There need be no fear that the traditional studies will thereby receive less attention; and there may be a reasonable expectation that the reflex effect upon the homes will be an uplifting one.

THE PREPARATION OF TEACHERS.

The teacher is the main agent in producing a good school. It cannot rise above his level. Its improvement must come through his improvement, and that must come through wasteful experiments on children or through special training. In teaching, as in every other calling, the best results are accomplished by trained rather than untrained persons. The genius may succeed without training, but the supply of these is exceedingly limited, and even the genius may profit by the experiences of others. Normal Schools are the people's safeguards against empiricism in the school room. In them the intending teacher is compelled to prove his fitness for his calling before he is permitted to begin his practice. He is trained not for his own sake but for the protection and furtherance of the interests of the children. It is generally admitted that during the

first years of service, at least, the trained teacher is worth about twice as much as the teacher who has had no professional training. Everywhere, countries noted for the excellence of their educational institutions are adding to the number of their training schools and increasing their efficiency.

The academic preparation of teachers is given in the High School departments and the professional preparation in the Normal Schools. Candidates are not admitted to the latter till they have passed the prescribed non-professional examinations. The scope and character of the work required of candidates before they are permitted to teach may be gathered from the Regulations (Appendix "B") and the Examination papers (Appendix "C"). A study of these will show that provision has been made for the preparation of teachers who will add to sound scholarship a knowledge of the best educational practice of the present. In addition to those who passed our non-professional examinations, there were in attendance at the last session of the Normal School graduates in Arts from the Universities of Dublin, Dalhousie, McGill, Victoria, Toronto and Manitoba.

The early efforts of the Board of Education to secure professional training for its teachers are interesting. In its Report for 1886-1887 it gives a copy of a Resolution forwarded to the Minister of the Interior affirming the need of a Central Training School for the professional instruction of teachers and asking financial assistance therefor. By Resolution adopted March 14, 1889, it was made compulsory on every Union School, if required by the Board of Education, to have a Normal School department with annual sessions beginning on the first Monday in November and ending on the last Friday in March following. The only work undertaken in accordance with this Resolution, of which any official record exists, was done by Mr. A. H. Smith, B.A., principal of the Moosomin Union School, who in addition to his other work delivered a series of lectures on the science and art of teaching to a number of students who had obtained second and third class non-professional certificates. This voluntary course ended April 8, 1890.

Complaints having been made that too much time was devoted to the training of teachers, the Secretary was instructed at a meeting of the Board of Education held Sept. 10, 1890, to point out to the principals of Union Schools that the training of teachers is not part of the work of any Union School until a Normal department therein is authorized. At the same meeting the following Resolution was adopted: "That a Normal Department be established at the Regina and Moosomin Union Schools, to be conducted in each case by the Inspector of Schools for the District, the first session to open on the first Monday in November, and that all teachers in each of these Districts, who hold non-professional certificates and desire to teach, be invited to attend the session held in their District: That, with regard to the holders of non-professional certificates in other Inspectoral Districts, whenever there are ten such who desire to receive Normal training in any Union School, the Board will endeavour to arrange for a Normal Session being held in such school." These sessions were to close on December 24 for Third class candidates, and on the last Friday in March for First and Second class candidates.

At Regina no candidates accepted this invitation. Six Third class candidates were trained at Moosomin by Inspector Hewgill. In 1891 no session was held. In the beginning of 1892 Inspectors Rothwell and Hewgill conducted sessions at Regina and Moosomin. In November;

1892, the Board offered to conduct sessions in Alberta and Saskatchewan but no students accepted the invitation. During the early part of 1893 sessions were conducted in Regina and Moosomin by Inspectors Rothwell and Hewgill.

By the School Ordinance assented to December 31, 1892, previously existing School Ordinances were amended and consolidated; a Council of Public Instruction constituted and power given to establish Normal Schools. Under this Ordinance the present Superintendent of Education was appointed Director of Normal Schools, April 1, 1893, and in August the Council by Regulation declared "A non-professional certificate shall not be valid as a licence to teach." This made professional training compulsory on all candidates for teachers' certificates. Sessions for First and Second class candidates are conducted annually in Regina beginning September 1 and ending December 22. Sessions for Third class candidates are conducted at convenient local centres by the Inspectors under the supervision of the Superintendent, who delivers a course of lectures at each. These sessions begin January 2 and end March 15 in each year. The conditions governing admission and the courses of study are set forth in the Regulations (Appendix "B"). Statistics are given in Table VI, Appendix "D."

THE SUPPLY OF TEACHERS.

Except in remote districts there has been but little difficulty in obtaining teachers. The salary offered in these is small, the engagement for but part of the year, and the journey thither an expensive one. Often, too, the teacher finds himself with little congenial society and without a comfortable boarding house. It cannot be expected that successful teachers will accept such appointments.

To make it possible for such districts to keep their schools open, provisional certificates are issued to persons who present such evidence of scholarship that there is a reasonable probability of their being able to pass the next teachers' examination. These certificates are not issued till the trustees declare that they have advertised for a qualified teacher and have used all reasonable effort to secure one but without success. Then upon the application of the trustees—not of the would-be teacher—a provisional certificate is issued, valid for that school only, and terminating at the opening of the next examination for teachers.

This reasonable rule has lessened considerably the number of provisionally certificated teachers, and if more trustees would advertise in newspapers published in the larger centres the number would be still less. Few of such teachers do more than keep school. They do not teach because they do not know how, and the children are the victims of their experiments. The attempt to secure provisional certificates for friends or relations of trustees, though applications from qualified teachers have been received, is not yet unknown. It is still too often true that a small salary and a belief in a particular creed are more powerful factors in securing an engagement than manner, culture and teaching skill.

EXAMINATIONS.

Under the Ordinance of 1892 promotions from Standard III upward were determined by a yearly written examination conducted by a central board consisting of the Superintendent of Education and the Inspectors.

An annual grant of \$18 per pupil in daily average attendance in all Standards above III was paid to those promoted from any Standard to the next higher one within two years. In 1893 promotion examinations by the central board were abolished in all Standards except III and IV, the grant clause remaining as before.

These examinations, for a time, helped the schools in certain ways. They raised the standard of scholarship, directed the teaching into sounder lines, caused the essentials of subjects to be learned more thoroughly, compelled attention to concise methods of recording work, and spurred the indolent and indifferent to more vigorous and systematic endeavour. They hindered the schools in certain ways. After a time, many trustees, and even some teachers, began to consider the children as instruments for earning grants of public money; and preparing for examination rather than for life became the main aim in too many schools. The prolonged nervous strain prior to and during the examinations, coming frequently at a period when physiological changes of great import to the individual were taking place, was a danger to health that gave thoughtful teachers much concern. Inspectors reported that wrong ideals were being set up, that increasing attention was given to products rather than processes, that memorizing of unorganized knowledge was on the increase, and generous teaching on the wane. It was admitted that, though written examinations may test intellectual acquirements, they cannot measure the teacher's efforts to secure graceful behaviour, polite speech, and moral growth. Nor was it surprising that teachers began to prepare their wares for the educational market, looking for their reward in increased money grants and correspondingly grateful trustees.

The effects of the abolition of these examinations in the higher Standards were interesting and instructive. In certain schools where passing examinations had been a leading aim, teachers complained that pupils were less earnest in their work and less regular in attendance. Inspectors reported that previously these pupils had the fear of failure at the examination kept permanently before them, and had not been led to work from those scholarly impulses that lead to truly successful results, had not formed habits of generous reading around even the subjects examined on, and had not acquired a love of knowledge for its own sake. In other schools where passing these examinations had been an incident, not an end, in educational effort, no difference in application was noticed.

After three years' observations of the result of this partial change these promotion examinations were abolished by the Ordinance of 1896. Promotions may be made at the end of each term by the teachers, who can take account of health, mental vigour and application as well as scholarship in determining whether a pupil will be profited by being placed in a higher Standard. These promotions are subject to revision semi-annually by Inspectors on whose report, concerning the government and progress of a school, small grants are payable.

Pupils who desire certificates of having completed the course of study prescribed for the first five Standards may present themselves at the Public School Leaving Examination which is held annually in June. Persons presenting these certificates are admitted into High School departments without further tests.

INSPECTION.

That an inspector is a necessary aid in city schools where the circumstances are favourable to good teaching is admitted by everybody. Good

buildings, suitable apparatus, trained and experienced teachers may be found in every large city, but everywhere in these large centres an inspector is found directing, inspiring and unifying the work. How much more valuable and necessary must inspectors be in rural districts where so many of the teachers are untrained, partially trained or inexperienced! These need the guidance, counsel and help of experts in teaching. Through these inspectors the good features of the best schools are widely diffused. They foster what is good, improve what is poor. How else are defects in teaching and management to be remedied? Normal School training does not render inspection unnecessary. The Normal School cannot test power of independent management under the restrictions and disadvantages which young teachers have to contend with in rural districts. It gives advice, and such practice in management as its model school affords, leaving to inspectors the correction of those mistakes which independent management originates or develops.

Victor Cousin, in his observations on the schools of Prussia, declared that a leading element of success in any system of public education is a scheme of thorough inspection. Only through it can be determined whether the schools are doing efficient service along the lines prescribed by the State. Thorough inspection insures the State's receiving good value for its expenditures on behalf of education. Schools are good as their inspection is intelligent and thorough, and poor as that inspection is aimless and accidental.

Each school is inspected twice a year if possible, and a written report sent to the Council and to the trustees. These reports are of much service to the local authorities, as they contain the opinions of an expert on the condition of their schools. Buildings, grounds, apparatus, teaching, government and general progress are described and hints given as to ways of securing desirable improvements. The second report shows, in most instances, that an honest effort has been made by trustees and teacher to remedy matters complained of in the first report.

The reports to the Council are fuller than formerly, and afford ample evidence of general progress. They show, too, that there are trustees who pay no attention to reasonable suggestions respecting buildings and apparatus, and retain teachers after their incompetence has ceased to be a matter of doubt. It is hoped that next year the grant dependent on inspection may, through its effect on their pockets, induce action which the needs of the children have failed to secure. The inspectors also examine the accounts of treasurers, investigate difficulties in districts, and encourage the formation of new districts where there is a sufficient number of children of school age.

READING.

Reading receives much attention. By a judicious union of the word, phonic and sentence plans, and generous use of the blackboard, teachers enable pupils in Standard I to read at least twice as much in a term as they did three years ago. An increasing number of teachers, using the Primers chiefly as a guide while mastering the simpler word forms, base much of their instruction in reading on Nature lessons, stories from history, and simple poetry. Classes in this Standard have read in the usual period not only the Primers but also Scudder's Fables and Folk Stories, many of the nature poems in Lovejoy's collection and the simpler portions of "Hiawatha."

The amount of matter contained in the readers used in Standards II and III is insufficient and the teachers' efforts to secure supplementary reading do not receive that encouragement which they deserve. Many teachers rather than have their pupils "mark time" supply it at their own expense.

The need for additional reading matter is a pressing one. Many of our teachers by means of concerts and other entertainments have secured small libraries and are adding to them yearly. If an annual grant of five or ten dollars toward a library were given to each district contributing an equal amount the schools would derive more benefit therefrom than through any other equal expenditure. We should then be able not only to teach the pupil how to read but, what is quite as important, teach him what to read.

In all Standards the pupils are trained to give in their own words the substance of what they have read. Through silent reading they acquire the habit of mastering by themselves the contents of a long selection and the relation of its parts to the whole. This careful study of the subject matter has not infrequently been accompanied by a lack of sufficient individual practice in oral reading. The pupil's analysis of the selection shows his grasp of its thought, but oral reading reveals his appreciation of it. As Prof. Dowden has said: "The reading which we should desire to cultivate is intelligent reading, that is, it should express the meaning of each passage clearly; sympathetic reading, that is, it should convey the feeling delicately; musical reading, that is, it should move in accord with the melody and harmony of what is read, be it in verse or prose."

LITERATURE.

The effort to give pupils some acquaintance with good literature is begun in Standard I and continued throughout the school course. No other feature of our work is more promising.

In the first two Standards many teachers read aloud daily a selection of good simple literature, too difficult sometimes to form a part of the reading exercise but not too difficult for the pupils to understand and enjoy. A short stanza selected for its ethical, patriotic, aesthetic or other value is memorized and care is taken to have it uttered intelligently, distinctly and rhythmically. In this way the formation of a taste for good literature is begun.

In the next two Standards this work is continued and other work introduced. The poems in the Readers are supplemented by others chosen from the same authors and studied from the blackboard. The pupils are encouraged to widen their knowledge of these authors by home reading of additional poems named by the teacher. Each poem is read as a whole to get its general meaning. It is separated into its component parts and the relation of these to each other and to the whole is studied. Then, in the light of this analysis, it is read again, as a whole, to catch the deeper meanings that lie beneath the surface. Questions of artistic structure and technique begin to receive some attention.

Through classification of the reading lessons preparation is begun for comparative study later. Pupils in Standard III study from their readers "Lucy Gray," "The Sands o' Dee," "The Wreck of the Hesperus," and "The May Queen" in succession. They make a study in Unselfishness while reading "The Heroic Serf," "Golden Deeds" and "Abou Ben Adhem and the Angel," and follow that with a related one

while reading "The French at Ratisbon" and "The Road to the Trenches."

In Standards III and IV character studies are introduced and the pupils are led gradually to look on literature as an interpreter of life, as an "effective agency for cherishing within us the ideal." In Standard V and succeeding Standards fuller studies have been made of a number of selections from Longfellow, Tennyson, Wordsworth, Coleridge, Campbell, Milton and Shakespeare; and from Hawthorne, Scott, Arnold, Newman and De Quincey.

The inspectors' reports and the examination tests show better results than in any previous year. The improvement in the teaching of this subject has come chiefly through the sympathetic study of it by our teachers. More and more they are coming to feel the vitalising, spiritualising influence of the best literature, to believe that it "awakens within us the diviner mind and rouses us to a consciousness of what is best in others and ourselves," and to desire that their pupils shall share in their treasures and receive guidance and encouragement from the master minds. It is this that has made the teaching of literature so generous and inspiring.

SPELLING.

Though this subject is learned rather than taught, improved results are reported. Words spelled regularly present little or no difficulty to pupils who have had practice in phonics and word-building, and hence require but slight attention. When words spelled irregularly are assigned, the difficulties in them should be pointed out and they should be grouped with other words similarly formed. The pupil may then study each word as one of a group with a common element. His ability to spell these and others of the type may be tested by dictated sentences. Helpful rules of spelling may be inferred from such groups. The few irregular words that cannot be thus grouped may be learned by transcription. No time should be wasted over words which the pupils may seldom or never have occasion to use. Perhaps the most gratifying feature of the work in spelling is the careful attention given to it in every written exercise.

WRITING.

The Vertical System has been in use for two years with very satisfactory results. Pupils who had already learned to write legibly were not required to adopt it. Teachers report that the younger pupils now learn to write neatly and legibly in much less time than formerly.

An examination of the rough exercise books used daily gives a better idea of the pupil's real progress in writing than the copy books do. Our inspectors, judging by this test, report a distinct gain in neatness and legibility. As soon as pupils write neatly, legibly and rapidly, writing lessons, as such, cease.

COMPOSITION.

The work in composition is simpler and more systematic than it was, though much remains to be done before it can be said to be well taught. The aim in all Standards is to lead the pupils to express themselves simply and clearly on any topic about which they have thought or read,

The work in each Standard is divided into two parts--the first or "real" concerning itself with the expression of thought, the second or "formal" concerning itself with the structure of the sentence and later the paragraph and theme.

The pupils gather thoughts from the lessons in history, literature, geography and other subjects, learn how to arrange them and, after giving oral expression to them, write them with due regard to the mechanics of the composition. Errors are corrected from the standpoint of thought and but one or two considered in any lesson. By a series of sentences on the blackboard the pupils are led to see the nature of the error observed by the teacher. Each pupil then reads his own composition to discover whether he has made this error and to correct it if he finds it. Self-criticism and self-correction are aimed at.

In the higher Standards there is added analysis of typical passages of prose to discover their essential characteristics. Through this analysis the study of structure is emphasized. On the order of thoughts depends the clearness of their presentation. Some knowledge and appreciation of style is also secured.

GRAMMAR.

Through the logical forms of subject, predicate and modifier grammar reveals the essential nature of thought and hence the formal study of it is valuable as a training in thinking. Parsing makes necessary the grouping of words according to function and form and thus becomes a discipline in classification. Analysis is employed as an aid in discovering the ideas in a sentence and their relation and position. It is thus brought into close connection with reading and composition. Correct speaking depends more on the forms of speech heard and read than on the rules of grammar, hence considerable attention is given to the correction of errors in the language used by pupils.

With truer conceptions of the purpose of grammar has come an improvement in the modes of teaching it and, though less time is given to the study of it, better results are obtained.

HISTORY.

History, in recording men's deeds, sets forth their relations to each other and to the State. The relations of men to each other give rise to morals. The relations of men to the State involve citizenship. Accordingly one use of history is to form moral notions in children and another is to teach patriotism and civic duty. Also, if properly taught, it affords a first rate discipline in reasoning of that practical kind needed in every day life, arouses a love for reading and gives a sound method of study.

In Standards II and III the lives of a small number of leading Canadians and Englishmen are described by the teacher and the children are led to consider their public acts and are guided in forming such judgments on the morality of these acts as they are capable of. The reasons for and against the doing of an act are sought for carefully. The relation of motives to actions is considered. Judgment is deferred until all available information has been secured. The judgment in itself may not be worth much, but the habit of eliminating personal feeling and looking at both sides of a question before giving a judgment is one of inestimable value in every department of life. This condemning of wrong deeds and

approving of right deeds will tend to establish just ideas of right and wrong in the children's minds and these ideas must have their influence on conduct, must contribute to nobler living. Froude says, "History is a voice forever sounding across the centuries the laws of right and wrong." Nor are these children too young for such training. Before they enter school they have begun to learn their relations to those about them and in the history lesson they continue this study.

As the large majority of our pupils do not remain at school after the work of Standard III is completed, especial efforts are put forth to make them familiar with the essentials of the history of our own country. Those features which indicate best the stages in the progress of the Dominion and its present condition are fixed in their minds as firmly as possible and will serve as centres around which their future reading will arrange itself. Our best patriotic songs and poems are sung and recited.

A study of the lives of those men who have made our country what it is will tend to teach our pupils to have high aims and to be true to those aims. A knowledge of the struggles through which the country has passed in attaining its present condition will make for intelligent patriotism.

In Standards IV and V a fuller knowledge of the history of Canada and England is obtained through a study of text books and supplementary reading. Constitutional struggles in Canada are compared with corresponding ones in England. An outline study of how we are governed completes the work in history in these Standards.

In the High School Standards the history of Canada and England is reviewed and the pupils' knowledge widened. The "Constitution" of each is studied, the texts being Bourinot's "Constitutional History of Canada," and Bagehot's "English Constitution." The history of the world as presented in Swinton's "Outlines," completes the course.

The errors most generally mentioned by our inspectors are teaching too many details through not distinguishing between essential facts—those standing for a principle—and illustrative ones; appealing too much to the memory and too little to the judgment and so minimizing the disciplinary value of the subject; failing to connect the present of the nation with its past, of which it is an evolution, and therefore to secure a living illuminating interest in the study. There is a slow but steady improvement in the character of the teaching. Broader scholarship in the teacher and a few volumes of history to supplement the pupils' texts are our chief needs.

GEOGRAPHY.

The chief purpose of this study is to enable pupils to perceive clearly the earth's essential surface features and the relation thereto of man's modes of living. The relief of the continent determines in the main its drainage and, through the drainage, the distribution of the soil. Where the good soil is will be found the plant life, and the animal life dependent thereon. Where plant and animal life supply materials for man's food and shelter, there he will make his home. The products of the soil and mine will shape his industries, as the sources of power in coal, wood and water will influence his manufactures.

Professor Davis of Harvard, in discussing this topic says: "There is no occupation in which geographical surroundings do not enter as controls, either direct or indirect. The farmer is continually held in close

touch with the local surface features. The railroad manager has continually to deal with the problem of transporting products from one district where they are supplied to another where they are consumed; and the successful working of his road depends largely on its cost of construction and operation, both of these depending in turn on the form of the region that the road traverses and on its location with respect to centres of population. The merchant deals in the products of the earth, and their cost is dependent on such geographical factors as distance of source, ease of supply, demand in respect to domestic needs and so on. The legislator is chiefly concerned with matters of trade and commerce, and these great activities are largely in the hands of geographical controls."

Nor must the relation of this subject to history be overlooked. The physical characteristics of countries have conditioned their history. The French explorers and colonizers found an open way to the centre of North America through the St. Lawrence, its lakes, and the Mississippi, while the English colonists were hemmed in for a long period by the Alleghenies. Mountain barriers separate France and Spain, Austria and Italy. The narrow sea has since the days of William the Conqueror marked the line between England and the Continent.

The accessible, essential earth forms are learned by direct observation and the remaining ones by study of pictures, mouldings, maps and descriptions. Simple explanations of the meaning and origin of surface features accompany this work. When the study of a continent is taken up, it is moulded in sand to show the relief, and drawn to show the length, breadth, and coast line. Each place taught is located on the globe to get its true position, and on the relief map or moulded map to view it in relation to structural and industrial conditions. A special study is made of our own continent and the British Empire but only the main political divisions in South America, Asia and Africa receive attention. Comparative study aids much in making geographical principles clear. Increased attention is given to industrial and commercial geography but the number of facts to be learned has been lessened greatly. There is more appeal to the reason and less to the memory than formerly.

In the High School Standards, in addition to a review of the general geography of the world there is a special study of the geography of the British Colonies. The physiographic explanations of fundamental forms are dealt with somewhat fully. Atmosphere, climate, distribution of life, and mathematical geography are the topics which complete the course.

The improvement in the teaching of this subject is quite marked. Our teachers are reading and keeping up with the advance in the teaching of geography now in progress.

NATURE STUDY AND AGRICULTURE.

History and literature deal with man, describing his real and ideal acts. The world of Nature—man's physical environment—conditions him and so becomes a subject of study. To give pupils a personal insight into Nature, some understanding of her laws, some appreciation of how she conditions their lives, and a permanent interest in her; to train them in habits of correct observation, cautious interpretation and accurate statement; and to lead them to acquire useful knowledge at first hand are leading aims in Nature study.

The pupils study the plant and the animal as living organisms with work to do in the world, and learn how what they do and their manner of doing it affect their form and structure. The development of a plant from the seed to the flower and the fruit, the growth of an animal from birth to maturity and death, the relation of plant and animal to each other and to environment, the effect of sun, wind, moisture and soil on each are investigated, and the pupils see that the life history of the plant and the animal throws light on their own lives and conditions them. Thus they gradually acquire an insight into life in its unity.

The course in history and literature turns the attention of the child to books. The course in Nature study, supplemented by the geography studies in the first two Standards, takes the child away from books to nature—to the plant and animal, to winds, water and land in their varying forms. Type objects are studied in their natural setting and each becomes a key to the study of others of the same class, and so the knowledge of the individual object grows increasingly complete.

The pupil passes in Standards III, IV and V through a simple course in Agriculture dealing with the preparation of the soil for seed, the growth and management of crops, the feeding and care of farm animals, dairying, tree planting, and the destruction of noxious weeds and insects. The "Study of Noxious Weeds in the North-West Territories" made in 1895 by Messrs. Hutcherson and Wadge in connection with the Normal School and distributed to teachers and agricultural societies, has been most helpful.

The hearty interest taken in this study by the children when it is presented objectively is most gratifying. Parents see its practical value. Our best teachers speak warmly of its disciplinary effects. As the study of colour and odour and form of flower and fruit in relation to fertilization and distribution is supplemented by the reading of Mary Howitt's "The Use of Flowers," "The Chorus of Flowers," Wordsworth's "To the Daisy," Lowell's "To the Dandelion," Bryant's "To the Fringed Gentian" or Elliott's "To the Bramble-Flower;" as the work of the seasons, wind, cloud and snow are reviewed through the reading of Mrs. Hemans' "The Voice of Spring," Lowell's "June," Bryant's "The Evening Wind," Shelley's "Cloud," Lowell's "Snow Fall" or Whittier's "Snow Bound," the culture effect of the study of Nature's æsthetic phases reveals itself.

That this study will tend to affect the attitude of children towards agriculture and to increase the number of intelligent persons who will devote themselves to those industries on which the success of the great North-West depends, can hardly be disputed. But its higher value lies in the establishment of a permanent interest in nature and in what it contributes to that human happiness which consists in having "attentive and believing faculties," and in being able

To go abroad rejoicing in the joy
Of beautiful and well-created things;
To love the voice of waters and the sheen
Of silver fountains leaping to the sea;
To thrill with the rich melody of birds
Living their life of music; to be glad
In the gay sunshine, reverent in the storm;
To see a beauty in the stirring leaf,
And find calm thoughts beneath the whispering tree;
To see, and hear, and breathe the evidence
Of God's deep wisdom in the natural world!

That too many are teaching this subject perfunctorily and unintelligently must be admitted. Memorising of dictated notes instead of direct observation of Nature, teaching of botanical and zoological terms rather than relations of function and structure, and presentation of agricultural processes from a text instead of observation of them in the district and consideration of them from the preparing of the soil to the reaping of the harvest, are errors not yet unknown. Broader scholarship, sufficient training and close inspection are the remedies for such errors, and in each of these there has been a gain during the year.

SCIENCE.

In the High School Standards botany, chemistry and physics are taught, with laboratory work in each. The Elementary course in agriculture is reviewed and supplemented. The course is less liberal than it should be owing to the pupils not having that foundation knowledge of the facts of Nature, power of accurate observation, and method of study which they should have received in the elementary Standards. The present Nature study is paving the way for much better work in science in the near future.

ARITHMETIC.

There has been an advance in the teaching of this subject, but more time is devoted to it than it deserves on its merits. More rational work is done in the lower Standards, all operations being performed with small numbers but there is need for greater accuracy and rapidity in the fundamental processes.

The problems presented bear a closer relation to business and commercial life than formerly. Some teachers do not examine with sufficient care the problems set and so are not aware of the difficulties in them. There may be four difficulties to overcome in solving a problem and the pupil should have drill on each. He has to read the problem so as to learn what is given and what is required, and it is a useful exercise to have him read a number of problems in succession and give these facts without attempting solutions. He has to perform the reasoning orally and he may profitably do this with many problems without making the calculations. He has to perform the calculation and if he fails he should have drill in the fundamental rules till he becomes accurate. The calculations should be placed apart from the statement of the reasoning. He has to write his reasoning in logical form. Few teachers require this in arithmetic, though in geometry they take care that each step is separately expressed. The failure to require this lessens considerably the value of arithmetic as a training of the logical faculty. The making of problems by the pupils is proving a helpful device.

When a number of problems of a given type have been solved the teacher may as a method of generalizing the results introduce literal expressions and so prepare for the introduction of algebraic language and the equation. The pupil who can find what six apples will cost if three can be bought for nine cents can easily be led to find what p yards will cost if m yards cost n dollars.

ALGEBRA.

In Standard V the study of Algebra is begun. It is based on the pupil's previous knowledge of Arithmetic and he is led to find general

solutions for problems which he has been accustomed to solve by the particular analysis of Arithmetic. In this way Algebra clarifies and widens his knowledge of Arithmetic. The equation is introduced at once and the elementary rules are taught as necessary aids in its solution. The making of problems by the pupils to fit equations has been found a very useful exercise.

In the High School Standards the work is continued through progressions, series and logarithms. Emphasis has been placed upon the fundamental nature of the equation and more attention has been given to the interpretation of algebraic expressions and results. The method of recording solutions is neater and more logical.

GEOMETRY.

The study of Geometry is begun in Standard V. Hill's "Lessons in Geometry" is the text and the following quotation from the Programme of Studies gives the standpoint: "At first, the pupil should discover geometrical truths through measurement, drawing, construction and superposition rather than through logical demonstration. In demonstrations, clearness of reasoning, accuracy of statement and elegance of form should be emphasised. The subject matter of each lesson should be considered in its relation to life, *i.e.*, the actual occurrence in nature and in the structures of machines made by man, of the geometrical forms studied; and the application of the propositions to the ordinary affairs of life should be the basis and the outcome of every exercise."

With this work as a basis the six books of Euclid are studied in the High School Standards. Much care is bestowed on the writing out in logical form of the theoretical and practical exercises given on the propositions, and it is here that the greatest advance has been made during the year.

DRAWING.

Very little instruction in this subject has been given and much of that has been devoted to "picture making"—a rather useless exercise. Our teachers have not learned how to teach it. Teachers in-training should receive adequate instruction in the Normal School and teachers in our schools can, through correspondence classes, master the essentials of the subject. Some of our best teachers are doing this now with results gratifying to themselves and their pupils.

Drawing can be taught to all pupils who can learn to write and it is of use to all. It trains the powers of observation, for the child must observe carefully to represent truly. It gives an added means of expression—clearer perhaps than either speaking or writing. It makes the hand skilful and enables every artisan to construct and read working drawings and so aids him in his life work. It arouses and makes active the creative ability of the child and it leads him to see and appreciate the beauty in what surrounds him and strengthens his desire therefor.

MUSIC.

There is more or less singing in every school but little systematic instruction in music. Rote songs are sung ranging according to the taste of the teacher from "Litoria" to selections of high poetic and musical value.

Music affords a culture for the soul as well as a training for the voice and only such songs should be learned as express noble and refining sentiments, for the taste can be educated downwards as well as upwards. The poet has expressed his noblest thoughts in words, the painter in colours and the musician in sounds. The child who has been trained to read the poem and the picture but not the music finds himself shut out from one effective means of culture and pleasure. There is no reason why he should be. Almost every child can be taught to sing notes as readily as he reads words. Music coming as a recreation after severe mental work takes practically no time from the traditional studies and, when chosen to suit the feelings and moods of the pupils, has a restful, helpful effect on them. All that is necessary for the accomplishment of these ends is teachers who can teach the subject and the Normal School is undertaking henceforth to send out teachers prepared to do this.

TEMPERANCE.

Instruction in Temperance is compulsory in all schools. The syllabus states clearly what is to be taught and indicates the standpoint from which it is to be presented. This subject is not as well taught as it should be. Some teachers dwell chiefly on the evils of intemperance. Pictures of diseased organs are exhibited and the social ruin wrought by intemperance described. Other teachers dwell upon the virtues of self-reverence and self-control and picture the body with its appetites as under the rule of a trained will guided by an enlightened conscience. The former direct the mind downward and endeavour to save through deterring. The latter direct the mind upward and base their efforts on nobler incentives. It is believed that higher success will be achieved through presenting the ideal of a vigorous, healthy and unabused body as best preparing for life and its duties than through dwelling upon the physical, financial and social misfortunes of the intemperate. Love of the good is a higher motive to action than fear of the bad. "As a general principle there is more virtue in setting before children the joy of right living, with the scientific basis therefor, than the sorrow of wrong living." The sympathetic attitude of teachers towards this subject gives promise of increasing attention to it.

MANNER AND MORALS.

The Programme informs the teacher that it is his duty "to see that the pupil practises those external forms of conduct which express a true sense of the proprieties of life and that politeness which denotes a genuine respect for the wants and wishes of others." The inspectors report that the forms used in entering or retiring from private houses are practised in many of our school rooms, that the pupils are introduced to visitors, that polite apologies are made for trouble caused and thanks given for favours received, that girls have that preference in passing to and from class that will be accorded them as women in the home, that "Please'm," "Yes'm," etc., have given place to their courteous equivalents and that the forms due to age and position are taught and practised. It is recognized that graceful behaviour should have, as its basis, good moral character since "manners are not idle but the fruit of loyal nature and of noble mind." While there is a gratifying increase in the attention paid to these matters there are still schools where politeness and courtesy do not bear that relation to scholarship which they should.

In order that a pupil may do his duty intelligently he must know what his duty is, see the reasonableness of it and feel its obligatoriness. He has learned something of number and language before he enters school but once there he is instructed in the subject matter of arithmetic and grammar and required to put it to use as a test of effective instruction. The child entering school knows something of duty but of the subject matter of morality—man's relation to man—he knows little. He needs this knowledge. It can be acquired in substantially the same manner as the knowledge of grammar and can be turned to use daily until correct thinking passing over into right action is crystallized into right habit.

The topics to be presented and the mode of presenting them are set forth in the Programme where the teacher is informed that "it is his duty to turn the attention of pupils to the moral quality of their acts and to lead them into a clear understanding and constant practice of every virtue." Our teachers as a class appreciate their responsibilities in this respect and endeavour to discharge this duty conscientiously.

The influence of the school here is far reaching. The motives by which the teacher leads the child to control himself and perform his daily tasks will have a powerful influence in shaping his character. Beginning work punctually, doing a given amount of work within a stated period, working silently so as not to hinder his neighbour, co-operating with associates in common tasks or amusements, and obeying promptly the law of the school, make up a daily discipline the future value of which, in industrial and civic life, can scarcely be over estimated.

CONCLUSION.

In concluding this sketch of our system permit me to thank you and the members of the Council for the helpful advice and hearty assistance given me in every phase of my work. The Secretary and his assistants through careful attention to a very large correspondence have contributed greatly to the successful administration of the schools. To the Inspectors, whose comprehensive and capable reports have enabled me to keep in close touch with each school and to understand more fully than I otherwise could the special hindrances in many districts, I am deeply grateful.

With few exceptions our teachers are young, vigorous and progressive. A sound professional spirit unites them. They read educational books and journals and take an active interest in all that pertains to their vocation. They understand that knowledge, valuable as it is in itself, is subordinate to discipline and culture, that the ability to do profitable work in a higher grade is the true test for promotion, that obedience to authority should be founded on rational motives and not on force, that success is tested not alone by scholarship but by the growth of the pupils in honesty, industry, neatness, politeness, consideration for the wants and wishes of others and a just appreciation of the true ends of living. To their sympathy, cordial co-operation and helpful suggestions I owe more than I can express.

I have the honour to be,

Sir,

Your obedient servant,

D. J. GOGGIN,

Superintendent of Education.

REGINA, September, 1897.

APPENDIX "A."

PROGRAMME OF STUDIES

FOR THE

Schools of the North-West Territories.

JULY 1st, 1895.

This Programme is based on a *minimum* requirement for each Standard. It is prescribed by the Council of Public Instruction as a guide in classifying pupils. It may be modified to meet the needs of special schools but not without the written consent of an Inspector who shall forthwith report to the Council. The work in each Standard includes a review of the essentials in previous Standards.

It shall be the duty of each teacher to make a Time Table, based on this Programme, and to present it to the Inspector, at each visit, for his approval and signature.

READING AND LITERATURE.

Silent reading is used to obtain ideas and thoughts through printed or written words—to comprehend the subject matter as a whole and to grasp the significance of the parts, as well as to discover and appreciate beauties of thought and expression.

Oral reading is used to express these ideas and thoughts so as to be heard, understood and felt. It involves systematic training in the principal elements of expression—quality of voice, pitch, force, time, stress, inflection, emphasis, pause.

Supplementary reading is used to furnish additional reading matter; to provide reading collateral to the studies in nature, geography, history, literature, etc.; to cultivate a taste for good literature. Its use is optional.

Sight reading in silence is used to give power to glean thought quickly and intelligently from the printed page. It is followed by logical statement, in the pupil's own words, of what he has gleaned.

Selections of poetry and prose inculcating reverence, love of country, love of nature and admiration of moral courage are to be committed to memory and recited.

STANDARD I.

Authorized First Readers. Authorized Supplementary Readers.

STANDARD II.

Authorized Second Readers. Authorized Supplementary Readers.

STANDARD III.

Authorized Third Reader. Authorized Supplementary Readers.

STANDARD IV.

Authorized Fourth Reader. Authorized Supplementary Readers.

STANDARD V.

Authorized High School Reader. Authorized Supplementary Readers.

ORTHOEPY AND SPELLING.

Much attention should be given to accurate pronunciation. Pupils of the third, fourth and fifth standards should have constant practice in finding the pronunciation and meaning of words from the dictionary.

Special drills should be given on such words as are in their nature difficult to spell, and such as have been frequently misspelled in compositions. Pupils should not be drilled on the spelling of words which they may seldom or never have occasion to use.

STANDARD I.

Part I. Phonic analysis and synthesis, copying words, oral spelling.

Part II. Phonic analysis and synthesis, oral and written spelling of such words in each lesson as the pupil can learn while mastering the reading matter, transcription, dictation, uses of capital letters and terminal punctuation marks.

STANDARD II.

Phonic analysis and synthesis: transcription; oral and written spelling of such words in each lesson as the pupil can learn while mastering the subject matter—words to be arranged so far as possible in groups according to similarity in form; dictation; careful attention to spelling in all written exercises; uses of capital letters, terminal punctuation marks, quotation marks.

STANDARD III.

Careful attention to spelling in all written work; exercises as in previous Standards; division of words into syllables and marking the accent; common abbreviations and contractions; simple synonyms.

STANDARD IV.

Exercises as in previous Standards; a few helpful rules of spelling formulated inductively; meaning of common prefixes and suffixes.

STANDARD V.

Exercises as in previous Standards. Derivation and Composition of words, exercises being confined mainly to words which have an English primitive. (Consult "High School Grammar," Chap. IV, especially pp. 88—90, exercises I—X.)

COMPOSITION.

(a) Compositions should consist, almost entirely, of expressions of thoughts evolved in the teaching of such studies as Geography, History, Agriculture, Literature, etc. (b) Through progressive exercises both critical and constructive the pupils should be led to discover and apply

the leading principles and maxims of expression. Only the most important errors should be corrected in any one composition.

STANDARD I.

Brief oral and written expression, in complete sentences, of simple thoughts suggested by observation of objects, animals, plants and pictures; narration of personal experiences; reproduction of the substance of the lessons in Reading, etc.

STANDARD II.

(a) Brief oral and written description of observed objects, animals, plants and pictures; narration of personal experiences; reproduction of the substance of the lessons in Reading, History, etc.; simple letter writing.

(b) Combining thoughts into a simple sentence; mechanics of a composition—heading, margins, etc.

STANDARD III.

(a) Correct oral expression of thoughts evolved in the teaching of all subjects; brief, accurate and legibly written expression of these thoughts; the Paraphrase.

(b) Sentence structure in outline; use of the Paragraph; forms for letters, accounts, and receipts; drill to correct the chief errors revealed in written expression.

STANDARD IV.

(a) Correct oral expression of thoughts evolved in the teaching of all subjects; brief, accurate and legibly written expression of these thoughts; the Summary (Abstract); social and business letters.

(b) Sentence structure; Paragraph structure in outline; drill to correct the chief errors revealed in written expression.

STANDARD V.

(a) Correct oral expression of thoughts evolved in the teaching of all subjects; rapid, accurate and legibly written expression of these thoughts; Essay writing (Themes.)

(b) A systematic summary of the principles and maxims of expression previously discovered in practice; application of these in the correction of errors revealed in written expression; paragraph structure; pupils trained to criticise compositions in a methodical way.

GRAMMAR.

Grammar shows the structure of language. By revealing the rules of sentence building it helps the pupil in using correctly the forms of speech which the necessities of expression require. (Composition.)

Through the logical forms of subject, predicate and modifier it reveals the essential nature of thought and is an aid to the more thorough understanding of reading lessons.

The teaching of formal grammar should be brought into close connection with the work in reading and composition. Routine parsing and minute analysis should be avoided.

STANDARD I.

Oral correction of colloquial errors.

STANDARD II.

Correction of colloquial errors; division of a sentence into subject and predicate.

STANDARD III.

Correction of errors in the language used by pupils. Kinds of sentences—assertive, interrogative, etc.; purpose of each. Parts of speech, phrases, clauses—their functions and places in sentences. General analysis as an aid in getting the ideas in a sentence, and learning what words and groups of words do in the expression of thought.

STANDARD IV.

Correction of errors in the language used by pupils. Kinds of sentences—simple, compound, etc.; purpose of each. Division of the parts of speech according to use; inflexion in outline. General analysis used as a means of discovering the relation and position of ideas in a sentence.

STANDARD V.

An intelligent comprehension of the prescribed text book.

HISTORY.

Training of the moral judgment, and preparation for intelligent citizenship are important aims in teaching history. History should be associated with geography and literature—historical poems, etc.

STANDARD II.

Canadian History.—Lives of distinguished men described, e.g.—Columbus, The Cabots, Jacques Cartier, Champlain, Bishop Laval, Frontenac, La Salle, Montcalm, Wolfe, Sir Guy Carleton, Lyon Mackenzie, Papineau, Joseph Howe, Alexander Mackenzie, Sir John Macdonald, etc. Discussion of the chief excellences and defects in their characters to teach moral discrimination and, ultimately, to derive principles of conduct. Reading and reciting of patriotic poems.

STANDARD III.

Canadian History.—Outline study of leading features, e.g.: Discovery; exploration; struggle between the French and English Colonists; Treaty of Paris; Quebec Act; Constitutional Act; War of 1812; Rebellion of 1837; Union Act; Clergy Reserves; Land Tenures—Feudal, Freehold, Leasehold, Seigniorial; Reciprocity Treaty; British North America Act, etc.

English History.—Biography of persons honored as types of state or individual life—e.g.: Caractacus, Julius Caesar, (Arthur), Alfred, Canute, William I, Simon de Montfort, Edward I, Wolsey, Elizabeth, Charles I, John Hampden, Oliver Cromwell, Marlborough, Pitt, Nelson, Wellington, Lord John Russell, Victoria, etc. Discussion of their deeds to train moral judgment and incidentally to teach patriotism and civic duty. Reading and reciting patriotic selections.

In this Standard the presentation is to be oral, no text book being prescribed. After the lesson, supplementary reading should be encouraged.

STANDARD IV.

Canadian History.—The text book studied as a review and expansion of the topics discussed in the previous Standards.

English History.—Outline study of each people or period to exhibit its chief characteristics, e.g.: Saxons—a farmer people; brought with them the germs of our political institutions—a limited monarchy, parliament, courts of justice, personal holdings of land; gave us the body of our English tongue; became Christian from choice. The presentation of this outline is to be oral. Supplementary reading in history should be encouraged.

STANDARD V.

Canadian History.—An intelligent comprehension of the prescribed text; comparison of constitutional struggles in Canada with corresponding ones in England; outline study of how we are governed—parliamentary, judicial, municipal and school systems; our civic duties—voting, office-holding, tax-paying, support of law, etc.

English History.—The text book studied as a review and expansion of the topics discussed in previous Standards. Grouping of the essential facts in each period under topics indicating phases of progress, e.g.: political, industrial, intellectual, æsthetic, religious—to show the growth of the nation.

GEOGRAPHY.

STANDARD I.

Direction: Position of the sun in the morning, at noon, in the evening; cardinal points of the compass; location of important places and objects by pointing with the hand and naming the direction.

Water: Observation of forms of water such as clouds, fog, mist, rain, dew, frost, snow and ice as they occur to find the more obvious qualities and uses of each.

Winds: Recognition of calm, breeze, gale.

STANDARD II.

Direction: Semi-cardinal points of the compass; observation of the directions of winds bringing heat, cold, rain, snow, moisture, dryness.

Land: Hills, mountains—direction and nature of their slopes; plain, valley, prairie; cape, peninsula, isthmus, island; relation of these bodies to one another; their uses. (Teacher's reference: "How to study Geography," pp. 145—159, etc.)

Water: Fuller study of clouds, fog; mist, rain, dew; snow, ice, hail; as to uses and effects of each. Effects of sun and wind on these.

Spring, brook, river—source, banks, branches, mouth—lake; bay, sea, strait; relation of these bodies to one another; their uses.

Winds: Calm, breeze, gale, storm, hurricane: effects on land and sea, on plants, animals, people, vessels.

Maps: Construction of maps of school room, school grounds, neighborhood; map representation of geographical objects studied.

The World as a Whole: Outline study of its form, rotation, axis, poles, equator, hemispheres; hot, temperate and cold parts.

Continents: Their relative positions and sizes; characteristic animals and plants in each; occupations, habits, dress and modes of life of the leading peoples in each.

Oceans: Their relative positions and sizes; some characteristics of each.

STANDARD III.

Land: Mountain chains, slopes, great plains; description and uses of each. (Teacher's reference: "How to study Geography," p. XXV and pp. 145-147.)

Water: River systems.

Continent Structure: Great slopes, continental axis, land masses, secondary axis, great river basins, great river systems, coast lines. (Teacher's reference: "How to study Geography," pp. 13-51 and 146-152.)

The World as a Whole: Relief:—World ridge from Cape Horn to Cape of Good Hope.

Lowlands; World basins—their position between the two highlands of each continent. Outline description of each.

Drainage: World water parting: world river systems.

Winds: Elementary ideas of causes and influences of Trade winds, Return Trades, Polar Currents, Moonsoons. (Consult "Child and Nature," pp. 170-174.)

Ocean Currents: Elementary ideas of causes and influences of Gulf Stream, Japan Current, and Polar Streams. (Consult "Child and Nature," pp. 174-176.)

Rainfall: Formation of clouds and rain; places of much, little or no rain; reasons.

Climate: Outline study of distribution of climates. (Consult "Child and Nature," pp. 178-181.)

Productions: Chief agricultural, grazing, lumbering, and mining regions. (Consult "Child and Nature," p. 185.)

People: The different races and their distribution.

NORTH AMERICA.

(References for Teacher's use. Parker's How to study Geography pp. 185-218. King's Methods and Aids in Geography, chapters XIII-XVI. The Story of our Continent.—Shaler.)

Position.

Structure: General description of primary and secondary highlands, river basins.

Drainage: Great water-partings, great river systems, great lakes.

Outline: Shape, leading projections of land and water.

Climate: Temperature and moisture—their causes and influences generally.

Natural Production and Productive Regions: Chief agricultural, grazing, lumbering and mining regions; surplus productions and exports; deficiency and imports.

Waterways and Railways: Noted trade routes.

Cities: Prominent commercial centres of the continent and their relation to belts of products.

Political Divisions: Their relation to the physical structure of the continent; capitals, forms of government, nationalities, state of civilization.

North-West Territories: Studied generally as a review of a section of the continent: the agricultural, grazing, lumbering and mining regions; chief trade routes; about a dozen towns.

STANDARD IV.

Dominion of Canada studied as a review, with additions, of a section of the continent of North America. Same topics as for continent study. (Teacher's reference: "The Geography of the British Colonies," by Dawson and Sutherland.

South America. Outline study comparing its structure, drainage, coastline, climate and productive regions with those of North America. Political divisions—mainly Brazil, The Argentine Republic and Chili. (Teacher's reference: "How to study Geography," pp. 218-224. The "Geographical Reader"—American Book Company.)

Eurasia. (Europe and Asia.) General structure of Eurasia compared with that of North America and that of South America. (Teacher's reference: "How to study Geography," pp. 224-263.)

Europe. Under the same topics as North America. Comparisons.

Asia. Only a very general study of climate, natural productions and productive regions, trade routes, cities. Political divisions—mainly India, Japan and China. Comparisons.

STANDARD V.

Africa and Australia. Brief study of general structure; brief comparisons of main features with those of other continents.

British Empire.

Motions of the earth, day and night—reasons; latitude, longitude, tropics, polar circles, eclipses.

Heat, winds, ocean currents, tides, rainfall, dew, ice, glaciers, etc.

Distribution of soil, vegetation, animals, races of men, minerals; causes.

Great commercial centres of the world, great routes of commerce. (Teacher's reference: "How to study Geography," pp. 301-338; King's "Methods and Aids," chapters XVI-XVIII.)

NATURE STUDY AND AGRICULTURE.

(Teacher's reference books: Spalding's "Introduction to Botany," Newell's "From Seed to Leaf," Goodale's "Concerning a Few Common Plants.")

To interest pupils in Nature, to train them in habits of careful observation and clear expression, and to lead them to acquire useful knowledge are important aims in teaching this subject.

The pupil must study the plant, the animal and the soil rather than book descriptions of them. He may consult books after he has made his observations. The study of plant life should be emphasized in Spring though not restricted to that season.

This study should be connected with Language, Drawing and Geography.

STANDARD I.

Plant Life:

Seeds: Bean, pea, sunflower, corn, wheat.

Germination: its conditions—light, air, moisture, soil, warmth.

Structure: covering, cotyledons, embryo.

Seedlings: Parts—stems, roots, leaves.

Buds: Poplar, willow, maple, elm, spruce.

Covering, unfolding, arrangement on stem.

Animal Life: Cat, dog, cow, horse, sheep, hen, fish.

Covering, food, uses.

STANDARD II.

Plant Life:

Seeds: Fuller study of the germination, growth and structure of seeds selected for Standard I.

Plant structure: Herbs, shrubs, trees.

Stem: Its parts—wood, bark, pith; their uses.

Root: Its parts—primary root, rootlets, root hairs; their uses.

Leaf: Its parts—stipules, stock, blade, veins; their uses.

Fruits: Apple, orange or lemon, plum or cherry, pumpkin or squash, raspberry or strawberry; the uses of their parts to the plant and to man.

Animal Life: Fuller study of the animals selected for Standard I, including structure of feet, head and teeth; relation of structure and habits.

STANDARD III.

Plant Life:

Leaves: Their position, arrangement, form and venation; their relation to sunlight, air and direction of water to roots.

Flowers: Silverweed, anemone, rose, violet, everlasting pea, sunflower, wild bergamot: arrangement and uses of their parts.

Roots: Wheat, willow, carrot, turnip, radish, potato. Their forms, and the uses of their parts to the plant and to man.

Soils: Outline study of formation, composition, classification, exhaustion, restoration. (Public School "Agriculture" Chap. III.)

Animal Life: Ant, fly, grasshopper; hawk, crane, duck; gopher, wolf, muskrat:—Adaptation of their forms and structure to their modes of life.

STANDARD IV.

Plants: Their food—its sources, how taken up, how assimilated; their reproduction, propagation: dissemination of seeds.

Weeds: Bindweed or Wild Buckwheat, Tumble-weed, Hedge Mustard, Stink-weed, Russian Thistle; methods of destroying. ("Agriculture," chap. XII.)

Trees: Their cultivation for shade, ornament and protection. ("Agriculture," chap. XIX.)

Soils: Preparation of for seed. ("Agriculture," chap. VI.)

Animals: Feeding, care and management of horses, cattle, sheep and swine, ("Agriculture," chap. XIV.)

Insects: Growth, classification, remedies. ("Agriculture," chap. XII.)

STANDARD V.

Tillage: Drainage, fertilizers, subsoiling. ("Agriculture," chap. V.)

Crops: Their growth, management, rotation: diseases, remedies: soiling crops. ("Agriculture," chap. VII, VIII, IX, XI.)

Animals: Principles of feeding. ("Agriculture," chap. XIII.)

Dairying: ("Agriculture," chap. XVII.)

ARITHMETIC.

Every new thought process in this subject should be developed objectively. Principles and rules should be arrived at inductively. Accuracy and rapidity in the simple fundamental processes are important.

Problems should, so far as possible, have due relation to the demands of

modern commercial and business life. Clearness of reasoning, accuracy of statement and elegance of form in the solutions of problems should be emphasized. Pupils should have regular practice in the construction of problems. The subject matter of Nature Study, Agriculture, Geography etc., furnishes interesting data for many problems.

STANDARD I.

(Teacher's reference: Wentworth's "Primary Arithmetic.")

PART I.

Numbers 1 to 12—their combinations and separations, oral and written; the making and use of arithmetical signs.

Making and showing relation of one-half, one-fourth, one-eighth; one-third, one-sixth; one-fifth, one-tenth; one-third, one-ninth, one-twelfth; one-seventh; one-eleventh; (Objective illustration—no figures used.)

Use and relation of pint, quart, gallon, peck, bushel; inch, foot, yard; day, week, month, year; five cent and ten cent coins; simple problems.

PART II.

Numbers 1 to 25—their combinations and separations.

Use and meaning of one-thirteenth one-twenty-fifth; review of fractions in Part I.

Use and relation of ounce, pound; hour, day; foot, rod; sheet, quire.

Counting to and from 25 by ones, twos, threes, etc. Drill in rapid figure work (especially in addition) involving combinations in the numbers 1 to 10. Reading Roman notation to XXV. Inventing and solving simple problems.

STANDARD II.

(Teacher's reference: Wentworth's "Primary Arithmetic.")

Numbers 25 to 100. Addition, subtraction, multiplication and division.

Use and meaning of one-twenty-sixth one-one-hundredth. Addition, subtraction, multiplication and division of fractions studied in Part I.

Percentage: Use and meaning of 50%, 25%, 10%, 5%, $33\frac{1}{3}\%$, $12\frac{1}{2}\%$; relation to fractions.

Use and meaning of pound, bushel; square inch, square foot, square yard; finding area of small surfaces.

Counting to and from 100, by ones, twos, etc., to tens; multiplication table made and mastered. Oral and written drill in rapid figure work (especially in addition) involving the combinations in the numbers 1 to 25. Reading Roman notation to C. Inventing and solving simple problems suggested by any subject studied.

STANDARD III.

Notation and numeration; simple rules.

Common Fractions: Addition, subtraction, multiplication and division of fractions whose denominators do not exceed one thousand. Common Factor and Common Divisor as needed in fractions.

Decimal Fractions: Addition, subtraction, multiplication and division of tenths, hundredths and thousandths; relation to Common fractions.

Percentage: Easy problems in Simple Interest and Profit and Loss using such applications as occur in ordinary mercantile business.

Remaining Weights and Measures used in practical life, taught and applied; measurement of surfaces and right angled triangles; contents of rooms, boxes, lumber, piles of wood and hay.

Oral and written drill in the figure work of the simple rules to secure accuracy and rapidity.

STANDARD IV.

Common fractions. Decimal Fractions, omitting Recurring decimals.

Simple Interest, Profit and Loss, Commercial Discount, Commission. Problems should be confined to cases occurring in ordinary mercantile business.

STANDARD V.

Ratio and Simple Proportion with their applications to Partnerships; Square Root.

Mensuration: Chapters VII to IX, inclusive, in Hill's "Lessons in Geometry."

Geometry: Hill's "Lessons in Geometry."

At first, the pupil should discover geometrical truths through measurement, drawing construction and superposition rather than logical demonstration. In demonstrations, clearness of reasoning, accuracy of statement and elegance of form should be emphasized. "The subject matter of each lesson should be considered in its relation to life, i.e., the actual occurrence, in nature and in the structures of machines made by man, of the geometrical forms studied; and the application of the propositions to the ordinary affairs of life should be the basis and the outcome of every exercise."

Algebra: First 100 exercises in Clarkson's "Public School Algebra."—Scholar's edition.

DRAWING (PROVISIONAL COURSE.)

(Teacher's reference: The Prang Primary Course in Art Education—Parts I and II by Hicks and Locke.)

Drawing is to be taught as an added means of expression. Pupils are to draw in blank books after observing the type solids and objects.

STANDARD I.

Teach the following forms as wholes from type solids and objects:

Sphere and similar forms, natural and artificial, e.g., ball, marble, apple, tomato, cherry, lemon, etc.

Cylinder and similar forms, natural and artificial, e.g., pencil, bottle, spool, pint measure, cup, rope, ladder, mallet, etc.

Cube and similar forms, natural and artificial, e.g., box, chest, basket, ink-stand, lump of sugar, etc.

Teach their parts—surfaces, faces, edges and corners and the relation of these parts: compare them.

Illustrative sketching in connection with Nature Study.

STANDARDS II AND III.

The work of Standard I and the following:

The type solids bisected and studied as new wholes.

Hemisphere and similar forms, natural and artificial, e.g., half an apple, dish, bowl, cap, oil can, etc.

Half Cylinder and similar forms, natural and artificial, e.g., bandbox, coin, etc.

Half Cube, square prism, right angled triangular prism, and similar forms, natural and artificial, e.g., box, trunk, car, roof of a house, etc.

Teach their parts—surfaces, faces, edges, and corners, and the relation of the parts. Compare them.

Teach geometric figures—triangle, square and rectangle from the solid. Draw objects based on these figures, e.g., pennant, envelope, door, cross, flag, etc.,

Illustrative sketching in connection with Nature Study.

STANDARDS IV AND V.

The work of previous Standards and forms derived from the type solids by variation.

Spheroid, ellipsoid, ovoid, and similar forms, natural and artificial, e.g., lemon, cucumber, watermelon, egg, hops, pear, strawberry, vase, etc.

Cone, circular frustrum, and similar forms, natural and artificial, e.g., carrot, volcano, mountain peak, hour glass, wine glass, etc.

Pyramid, square frustrum and similar forms natural and artificial e.g., cupolas, pyramids of Egypt, basket, etc.

Draw, from the solids, the geometric figures, circle, ellipse and oval and learn the terms circumference, diameter, radius, arc, centre, focus, axis. Draw objects based on these figures, e.g., target, circular window, hand mirror, eye glasses, horse shoe, padlock, fan, spoon, etc.

Illustrative sketching in connection with other studies.

MUSIC (PROVISIONAL.)

STANDARDS I AND II.

Singing of rote songs; drill on the scale and intervals—Normal Music Course First Reader, Part I.

STANDARDS, III, IV, V.

Normal Music Course First Reader. Second Reader when First is mastered.

HYGIENE—PHYSIOLOGY.

(Teacher's reference: Ontario Manual of Hygiene or Ontario Public School Physiology and Temperance.)

For convenience in teaching these subjects the ungraded school may be divided into two sections, the first comprising the pupils in Standards I and II and the second those in Standards III, IV and V. Practical effect should be given to the instruction in this subject by attention to the physical condition and habits of the children, the ventilation, lighting, heating and cleaning of the school room, and the supervision by the teacher of the sports and gymnastic exercises of the pupils.

Topics: Lessons on cleanliness, proper clothing, pure air, good water, exercise, rest, avoidance of draughts, wholesome food, temperate habits, bathing, accidents, poison, disinfectants, digestion, circulation, respiration, care of the eye and ear.

STIMULANTS AND NARCOTICS WITH SPECIAL REFERENCE TO THE USE OF ALCOHOL AND TOBACCO.

The great purpose is to build up in the mind a theory of self-control and a willingness to abstain from acts that may grow into dangerous habits. The moral and social effects should be made prominent and

abstinence be inculcated from higher ends than such as concern only the body. Technicalities and persistent dwelling upon details of disease should be avoided. Special delicacy of treatment is needed in those unfortunate cases in which children find themselves between the safe teaching of the school and the counter practices and influences of the home. Refrain from assertions of what is uncertain or sincerely doubted by high authority, or likely to be repudiated by the pupil when he is mature enough to judge for himself, since the admitted and unquestioned facts about the more dangerous stimulants and narcotics, and alcoholic drinks in particular, furnish invincible reasons why people in general should do without them, and young people above all others.

Teach what a stimulant is, what a narcotic is, what each may cause: effects of alcohol on the digestive, circulatory, muscular and nervous system.

Teach that tobacco contains a poisonous substance called nicotine, that it frequently injures the throat, lungs, heart and other organs in adults, that it is far more harmful to young and growing persons than to adults, that it is particularly objectionable in the form of a cigarette, that children should avoid it in all its forms, and that the more sparingly grown people use it, the better, as a rule, they are off.

MANNERS AND MORALS.

(Teacher's reference: White's School Management, pp. 218-294.)

Ungraded schools may be divided as in Hygiene when direct instruction is given.

It is the duty of the teacher to see that the pupil practices those external forms of conduct which express a true sense of the proprieties of life and that politeness which denotes a genuine respect for the wants and wishes of others. It is his duty to turn the attention of the pupils to the moral quality of their acts and to lead them into a clear understanding and constant practice of every virtue. His own influence and example; the narration of suitable tales to awaken right feeling; the memorizing of gems embodying noble sentiments, and maxims and proverbs containing rules of duty; direct instruction, etc., are means to be employed.

Topics: Cleanliness and neatness, politeness, gentleness, kindness to others, kindness to animals, love, truthfulness, fidelity in duty, obedience, nobility, respect and reverence, gratitude and thankfulness, forgiveness, confession, honesty, honour, courage, humility, self-respect, self-control, prudence, good name, good manners, temperance, health, evil habits, bad language, evil speaking, industry, economy.

APPENDIX "B."

North-West Territories, Canada.

REGULATIONS
OF THE
Council of Public Instruction
GOVERNING
TEACHERS' CERTIFICATES.

ADOPTED 9th JULY, 1895.

CERTIFICATES.

1. The classes of certificates, named in sub-section (e) of section 7 of The School Ordinance of 1892, may be obtained by fulfilling the following conditions:—

- (a) Furnishing a certificate of moral character of recent date.
- (b) Passing the prescribed non-professional examination.
- (c) Passing the prescribed professional examination.
- (d) Receiving a satisfactory report from an Inspector after having taught one year in these Territories on an interim certificate.

2. Certificates of the Third Class shall be valid for three years. All other certificates shall be valid during the pleasure of the Council.

NON-PROFESSIONAL EXAMINATION.

THIRD CLASS.

- 1. *Reading*:—The principles of orthœpy and elocution; oral reading.
Text-book.—The introductory chapters in the Readers.
- 2. *Spelling and Writing*.—Judged on all papers.
- 3. *English Grammar*.—Etymology and syntax; exercises.
Text-book.—"The Public School Grammar."

4. *Composition and Prose Literature*.—(a) The structure of sentences and paragraphs; expansion and contraction of prose passages; synonyms; correction of errors; critical study of the prescribed prose literature in connection with the study of the principles of composition; letter writing; punctuation. (b) An essay, from thirty to sixty lines in length, on one of a number of assigned subjects based upon the prescribed prose literature. This essay will be considered a test of the candidate's power to write English rather than a proof of his knowledge of the subject written upon. Legible writing and correct spelling, punctuation and paragraphing will be regarded as indispensable.

Text-book.—Welsh's "English Composition."

Prose Literature, 1896.—Selections from "Child Life in Prose." (No. 71 of the Riverside Literature Series.—Houghton, Mifflin & Co., Boston.)

Tales from Shakespeare—Charles and Mary Lamb: "The Tempest;" "A Midsummer Night's Dream;" "The Winter's Tale;" "Much Ado About Nothing;" "As You Like It;" "Two Gentlemen of Verona." (No. 64, Riverside Literature Series.)

1897.—"The Old Manse and a Few Mosses."—Hawthorne. (No. 69, Riverside Literature Series.)

Tales from Shakespeare—Charles and Mary Lamb. "The Merchant of Venice;" "Cymbeline;" "King Lear;" "Macbeth;" "All's Well that Ends Well;" "The Taming of the Shrew." (No. 65, Riverside Literature Series.)

5. *Poetical Literature*.—Intelligent comprehension of and familiarity with the prescribed selections; memorisation of the finest passages; oral reading.

Prescribed Selections, 1896.—Selections from Tennyson—"The Lady of Shalott;" "Recollections of Arabian Nights;" "The Lotos Eaters;" "Dora;" "Ulysses;" "Tithonus;" "The Lord of Burleigh;" "The Brook;" "Ode on the Death of the Duke of Wellington." (Part I of Selections by Rowe and Webb, McMillan's recommended.)

1897.—Selections from Tennyson—"Enone;" "The Palace of Art;" "A Dream of Fair Women;" "Morte d'Arthur;" "Sir Galahad;" "The Voyage." (Part II of Selections by Rowe and Webb, McMillan's recommended.)

6. *History*.—The leading events of Canadian and British History.

Text-books.—Buckley and Robertson's High School History.

7. *Geography*.—The general geography—physical, commercial and mathematical—of the world; geography of Canada and the British Empire more particularly.

Text-books.—The High School Geography; Geography of the British Colonies by Dawson and Sutherland, McMillan and Co.

8. *Arithmetic and Mensuration*.—Pure arithmetic; commercial arithmetic.

Text-books.—Hamblin Smith's Arithmetic to the end of chap. XXVI; also chaps. XXXIII and XXXIV. For Mensuration, consult Hill's Lessons in Geometry, chaps. VII to IX inclusive.

9. *Algebra*.—Definitions, elementary rules, simple equations of one, two and three unknown quantities, problems.

Text-book.—C. Smith's Elementary Algebra (Copp. Clark) chaps. I to VIII inclusive.

10. *Geometry*.—Euclid, book I. with easy deductions.

Text-book.—McKay's Elements of Euclid.

11. *Book-keeping*.—McLean's High School Book-keeping, chaps. I to V inclusive, and chaps. VIII and X.

12. *Botany*.—Elements of Structural Botany.

The course in third class botany shall be entirely practical and descriptive, and cover the following:—

The flower, its parts, their functions and relations as observed in the actual study of specimens of the following orders: Ranunculaceæ, Cruciferae, Legaminosæ and Rosaceæ.

The classification of members of these orders as to their genera (Spotton's Botany being the limit.)

The leaf in veneration, venation, phyllotaxis, surface, margin, outline, base, apex and function.

Inflorescence—determinate and indeterminate aestivation.

The simple study of fruits and their classification—as apocarpous and syncarpous, dehiscent and indehiscent.

The simple study of the root and stem, with drawings of cross sections and branch systems.

Pollination, fertilisation and the development of the seed from the ovule.

The study of hairs, tendrils, runners and such modification of parts.

Germination, illustrating the growth of the seed and conditions. Plant food, assimilation, respiration and transpiration. Simple drawings of all the parts.

A plant shall be submitted at the examination, not necessarily for purposes of identification but as a means of testing the candidate's practical knowledge of this subject.

Text-book.—Spotton's High School Botany.

Books of reference for teachers.—Newell's "Outlines of Lessons in Botany," part I (Ginn & Co.); Spalding's "Introduction to Botany" (D. C. Heath & Co.).

13.—*Agriculture*.—Definitions, plants, soils, tillage, crops, weeds, insects,

Text-book.—Ontario Public School Agriculture, chaps. I to XII inclusive.

14.—*Physics*.—The elements of physics.

Text-book.—Gage's Introduction to Physical Science, chaps. I, II, III and IV.

SECOND CLASS.

1. *Reading*.—The principles of elocution ; oral reading.

2. *Spelling and Writing*.—Judged on all papers.

3. *English Grammar*.—A general knowledge of the High School Grammar.

4. *Composition and Prose Literature*.—(a) The structure of sentences and paragraphs, expansion and contraction of prose passages, choice of words, figures of speech, punctuation, critical study of the prescribed prose literature in connection with the study of the principles of composition, rhetorical analysis of passages from prose authors not prescribed ; (b) An essay, about sixty lines in length, on one of a number of assigned subjects based upon the prescribed prose literature. (See Third Class.)

Text-book.—Genung's Outlines of Rhetoric (Ginn & Co., Boston).

Prose literature, 1896.—Scott's "Ivanhoe." Prose literature, 1897 . . .

5. *Poetical Literature*.—Intelligent and appreciative comprehension of and familiarity with the prescribed selections ; memorisation of the finest passages ; oral reading.

SELECTIONS FOR 1896.

Coleridge :—"The Ancient Mariner."

Longfellow :—"Evangeline ;" "A Gleam of Sunshine ;" "The Day is Done ;" "The Old Clock on the Stairs ;" "The Fire of Driftwood ;" "Resignation ;" "The Ladder of St. Augustine ;" "A Psalm of Life ;" "The Builders ;" "The Warden of the Cinque Ports."

The following selections from Palgrave's "Golden Treasury":—

Wordsworth :—"The Education of Nature ;" "A Lesson ;" "To the Sky Lark ;" "To the Daisy," and the following Sonnets: "To a Distant Friend ;" "O, Friend ! I know not which way I must look ;" "Milton ! thou should'st be living at this hour ;" "To Sleep ;" "Within King's College Chapel."

Campbell :—"Ye Mariners of England ;" "Battle of the Baltic ;" "Hohenlinden ;" "The River of Life."

Coleridge :—"Youth and Age."

SELECTIONS FOR 1897.

Goldsmith :—"The Traveller;" "The Deserted Village."

Byron :—Fourth Canto of "Childe Harold."

The following selections from Palgrave's "Golden Treasury:"

Wordsworth :—"She was a Phantom of Delight;" "The Green Linnet;" "To the Cuckoo;" and the following Sonnets: "England and Switzerland;" "Upon Westminster Bridge;" "The Inner Vision."

Keats :—"Ode to Autumn;" "Ode to a Nightingale;" and the following Sonnets: "On Chapman's 'Homer';" "The Terror of Death;" "The Human Seasons."

Shelley :—"Ozymandias;" "To a Skylark;" "The Recollection."

Scott :—"The Outlaw;" "Jock o' Hazeldean;" "The Rover;" "Rosabelle."

6. *History*.—(a) British and Canadian History. (b) General History.

Text-Books :—Buckley & Robertson's High School History. Swinton's Outlines of the World's History, Sections I, II and III.

7. *Geography*.—The general geography of the world, commercial and physical geography of America and Europe. Geography of the British Empire.

Text-Books :—The High School Geography; Geography of the British Colonies by Dawson & Sutherland (McMillan & Co.).

8. *Arithmetic and Mensuration*.—Arithmetic in theory and practice, area and volume of rectilinear figures, circles, spheres, cylinders, cones.

Text-Book :—Hamblin Smith's Arithmetic. For Mensuration refer to Thompson, Ballard and McKay's High School Arithmetic—Ontario series.

9. *Algebra*.—Definitions, elementary rules, simple equations of one, two and three unknown quantities, problems, factoring, highest common factors, lowest common multiples, fractions, equations with fractions, quadratic equations, simultaneous equations of the second degree, powers and roots, indices, surds.

Text-Book :—C. Smith's Elementary Algebra, chaps. I to XIX inclusive.

10. *Geometry*.—Euclid, Books I, II and III; deductions.

Text-Book :—McKay's Elements of Euclid.

11. *Book-keeping*.—As for Third Class. (Candidates for Second Class who have passed the Third Class examination since 1st January, 1893, are not required to take this subject.)

12. *Physics*.—The elements of physics.

Text-Books :—Gage's Introduction to Physical Science. (Ginn & Co.)

13. *Agriculture*.—The Public School Agriculture.

14. *Botany*.—As for Third Class.

FIRST CLASS.

1. *Spelling and Writing*.—Judged on all papers.
2. *The English Language*.
Text-Book :—Lounsbury's English Language, Part I (Revised Edition) (Henry Holt and Co.,) The High School Grammar.
3. *Rhetoric and Composition*.—(a) Style; invention; the reading of prescribed prose selections in connection with the study of rhetoric. (b) An essay about sixty lines in length on one of a number of assigned subjects based upon the prescribed prose selections. (See Third Class.)
Text-Book :—Genung's Practical Elements of Rhetoric. (Ginn and Co.)
Prose Selections.—Selections I, II, III, IV, VII, VIII, IX, X, XI, XII, XIII, XVII, XVIII, XIX, XXII, XXIII, XXVI, in "Handbook of Rhetorical Analysis" by Genung. Scott's "Ivanhoe."
4. *Poetical Literature*.—Critical reading of Shakespeare—"King Lear," "Macbeth."
The following selections from Palgrave's "Golden Treasury:" Milton: "L'Allegro;" "Il Penseroso;" "Lycidas;" "Ode on the Morning of Christ's Nativity;" "The Hymn." Sonnets: "On His Blindness;" "When the Assault was Intended to the City;" "To Cyriack Skinner."
5. *History*.
Swinton.—"Outlines of the World's History"—(American Book Company).
Bagehot.—"The English Constitution"—(Kegan, Paul, Trench and Co).
Bourinot.—"Constitutional History of Canada"—(Dawson Bros., Montreal).
6. *Geography*.—The Eclectic Physical Geography. (American Book Company.)
7. *Algebra*.—C. Smith's "Elementary Algebra."
8. *Geometry*.—Books I, II, III, IV; definitions of Book V; propositions 1, 2, 3, A, 4, 33 of Book VI; deductions.
Text-book.—McKay or Todhunter.
9. *Trigonometry*.—Up to and inclusive of the solution of plane triangles.
Text-book.—Hamblin Smith.
10. *Chemistry*.
Text-book.—Kirkland's Experimental Chemistry. (Gage & Co.)
11. *Botany*.—Elements of Structural Botany.
Text-book.—Spotton's "High School Botany."

12. *Physics*.—The Elements of Physics.

Text-book.—Gage's "Introduction to Physical Science."

MARKS REQUIRED TO PASS.

Candidates must obtain at least 34 per cent. on each subject, and 50 per cent. on the total number of marks.

If any subject is divided for the purpose of examination, candidates must obtain at least 34 per cent. on each subdivision.

PROFESSIONAL EXAMINATION.

(To be held at the close of the Normal School Session.)

THIRD CLASS.

1. *The Science of Education*.—The nature and aim of education, teaching and instruction; outline of helpful portions of mental science; application of the principles derived therefrom to teaching and government.

2. *The Art of Education*.—Methods of teaching each subject on the programme of studies for schools; school organisation; school management; school hygiene; duties of teachers and pupils as set forth in The School Ordinance and Regulations. Practice in teaching.

Text-books.—White's "Pedagogy;" "Manual of Hygiene"—Ontario Series, Chapters I, II, III, IV, V, X, XI, XII, XIII, XIV, XV, XXII; School Ordinance; lectures. (Each student is expected to have a set of text books in use in the rural schools.)

SECOND CLASS.

1. *The Science of Education*.—The nature and aim of education, teaching and instruction; psychology and ethics as the scientific basis of the art of education; their application to the development of the intellectual and moral powers.

2. *The Art of Education*.—Outlines of general method; application to the teaching of each subject of the programme of studies; school organisation; school management; school hygiene; school law; practice in teaching.

3. *The History of Education*.—Systems and theories of education; eminent educators.

Text-books. — McLellan's "Applied Psychology;" Landon's "Teaching and Class Management;" White's "School Management;" "The Report of the Committee of Five;" "Manual of Hygiene;" School Ordinance; Lectures.

References for History of Education.—Browning's "Educational Theories" and Quick's "Educational Reformers" (Appleton's Edition, 1891). (Each student is expected to have a set of the books in use in the schools.)

FIRST CLASS.

1. *The Science of Education*.—Nature, form and limits of education; development and training of man; education values; psychological and logical sequence of subjects; general method.

2. *The Act of Education*.—Application of principles derived from the science of education to the teaching of each subject on the programme of studies; school organisation; school management; school law; practice in teaching.

3. *The History of Education*.—Systems and theories of education; eminent educators.

Text-books.—Rosenkranz' "Philosophy of Education;" Sully's "Handbook of Psychology;" De Garino's "Essentials of Method" (Revised Edition); Landon's "Teaching and Class Management;" White's "School Management;" Laurier's "Lectures on Linguistic Method;" Herbert Spencer's "Education;" "Report of the Committee of Ten."

HIGH SCHOOL CERTIFICATE.

(HEAD MASTER.)

1. To have the degree of Bachelor of Arts from some university in Her Majesty's Dominions, and

2. To have a professional certificate of the first class.

Persons holding a professional certificate of the first class, or a High School Assistant's certificate, obtained after a course at an approved School of Pedagogy, may teach in a High School, but not as Head Master.

NOTE.—A certificate from a School of Pedagogy is not valid as a licence to supervise or teach in other than High Schools.

GENERAL.

1. The examination of candidates for teachers' non-professional certificates shall commence on the first Tuesday of July in each year at such places as the Council of Public Instruction may announce.

2. No male under eighteen years of age, nor female under sixteen, shall be allowed to write at these examinations.

3. Males under eighteen years of age, and females under sixteen, who desire to test their scholarship may, upon payment of a fee of \$5.00, write with the candidates for teachers' non-professional certificates. A statement of the marks awarded will be given them, but this statement will not be accepted as the equivalent of a certificate when the age limit has been attained.

4. Each candidate shall notify the Secretary of the Council of Public Instruction, not later than June 1st, of the class of certificate for which he is an applicant and the place at which he desires to write. Each such notice shall be accompanied by a fee of three dollars.

5. A non-professional certificate shall not be valid as a licence to teach.

6. The sessions of the Normal School shall be held as follows:—For third class candidates—2nd January till March 15th; for second class candidates—1st September till 22nd December; for first class candidates—1st September till 22nd December.

Only those holding non-professional certificates are admitted.

Candidates who have previously taken the training prescribed for second class are permitted to write on the final examinations for first class without attendance during the session.

PERSONS ELIGIBLE WITHOUT EXAMINATION.

1. A person who holds a certificate, other than third class, issued since 1st January, 1886, in any province of the Dominion or in the British Islands, and who presents (*a*) a statement from the Department of Education in his province that his certificate is still valid, (*b*) a certificate of moral character of recent date, (*c*) a certificate from his last inspector of having taught successfully, may receive a certificate of such class as the Council of Public Instruction may deem him entitled to.

2. Graduates in any university in Her Majesty's Dominions may, on the presentation of proofs of scholarship, character and age, receive non-professional certificates of the first class.

3. Persons holding certificates of educational value from institutions other than those mentioned may receive such certificates as the Council of Public Instruction may deem them entitled to.

All official correspondence should be addressed to

“ THE SECRETARY,

COUNCIL OF PUBLIC INSTRUCTION,

REGINA.”

APPENDIX "C."

TEACHERS' EXAMINATIONS, 1897.

FIRST CLASS.

POETICAL LITERATURE.

Time—Three hours.

1. Now, my co-mates and brothers in exile,
 Hath not old custom made this life more sweet
 Than that of painted pomp? Are not these woods
 More free from peril than the envious court?
 Here feel we not the penalty of Adam. 5
 The seasons' difference—as the icy fang
 And churlish chiding of the winter's wind,
 Which, when it bites and blows upon my body,
 Even till I shrink with cold, I smile and say
 "This is no flattery"—these are counsellors 10
 That feelingly persuade me what I am.
 Sweet are the uses of adversity,
 Which, like the toad, ugly and venomous,
 Wears yet a precious jewel in his head;
 And this our life, exempt from public haunt, 15
 Finds tongues in trees, books in the running brooks,
 Sermons in stones, and good in everything.
- (a) What is the purpose of this speech?
 (b) What is meant by "old custom," line 2?
 (c) What is the "penalty of Adam," line 5?
 (d) Explain "the seasons' difference" and "as," line 6.
 (e) Comment on the use of "fang," line 6; "chiding," line 7; "feelingly," line 11; "sweet" and "uses," line 12; "exempt," line 15.
 (f) Explain the allusion to the toad in lines 13-14.
 (g) Scan lines 13, 16 and 17. What effect is produced by the exceptional feet?

2. Compare the kinds of love exhibited in "As You Like It." Which has the better chance for happiness?

3. Comment on Jaques' view of life.

4. State the purpose of Scene III, Act IV (Serpent and Lioness).

5. Glamis thou art, and Cawdor, and shalt be
 What thou art promis'd. Yet do I fear thy nature;
 It is too full o' the milk of human kindness
 To catch the nearest way. Thou wouldst be great;
 Art not without ambition, but without 5
 The illness should attend it: what thou wouldst highly,
 That wouldst thou holily; wouldst not play false,
 And yet wouldst wrongly win; thou'dst have, great Glamis,
 That which cries, 'Thus thou must do, if thou have it;' 10
 And that which rather thou dost fear to do

Than wishest should he undone. Hie thee hither,
 That I may pour my spirits in thine ear,
 And chastise with the valour of my tongue
 All that impedes thee from the golden round 15
 Which fate and metaphysical aid doth seem
 To have thee crown'd withal.

- (a) Express in your own words the meaning of line 3 and comment on this use of "milk" and "kindness."
- (b) Explain "nearest way," line 4; "illness," line 6; "spirits," line 13; "chastise," line 14; "golden round," line 15; "metaphysical," line 16.
- (c) Give the general meaning of lines 8-12.
- (d) To what is the allusion in line 16?
- (e) Sketch briefly the character of Macbeth as revealed in this extract.

6. What do you consider the function of the Witches in this play?

7. And ever, against eating cares,
 Lap me in soft Lydian airs,
 Married to immortal verse,
 Such as the meeting soul may pierce,
 In notes with many a winding bout 5
 Of linked sweetness long drawn out
 With wanton heed and giddy cunning,
 The melting voice through mazes running,
 Untwisting all the chains that tie
 The hidden soul of harmony; 10
 That Orpheus' self may heave his head
 From golden slumber on a bed
 Of heaped Elysian flowers, and hear
 Such strains as would have won the ear
 Of Pluto to have quite set free 15
 His half-regained Eurydice.

- (a) What is meant by "Lydian Airs," line 2?
- (b) Explain lines 9-10.
- (c) Explain briefly the reference to Eurydice.
- (d) Give examples from this selection of how Milton "marries the sound to the sense."
- (e) Scan line 6. Show the appropriateness of the verse to the sense.
- (f) Examine the aptness and beauty of the figure in lines 2 and 3; in line 7.

8. And, as I wake, sweet music breathe
 Above, about, or underneath,
 Sent by some Spirit to mortals good,
 Or the unseen Genius of the wood.
 But let my due feet never fail 5
 To walk the studious cloister's pale,
 And love the high-embowed roof,
 With antique pillars massy proof,
 And storied windows richly dight,
 Casting a dim religious light. 10
 There let the pealing organ blow,

To the full-voiced quire below,
 In service high and anthems clear.
 As may with sweetness, through mine ear,
 Dissolve me into eestasies, 15
 And bring all heaven before mine eyes.

- (a) Explain "due," line 5 ; "pale," line 6 . "high-embowèd," line 7 ;
 "massy proof," line 8 ; "dight," line 10.
- (b) Explain line 15.
- (c) Compare the effect of the music on the speakers in questions 7
 and 8. Show whether it is suited to the mood of each.

9. Complete any one of the following quotations :

All the world's a stage,
 And all the men and women merely players :

* * *

Canst thou not minister to a mind diseas'd
 Pluck from the memory, etc.

* * *

Fame is no plant that grows on mortal soil,
 Nor in the glistening foil, etc.

FIRST CLASS.

THE ENGLISH LANGUAGE.

Time—Two Hours.

1. Name and describe the three early English dialects. Which is the basis of our English language? Give reasons for its rise. Would the same reasons apply to the rise of the Wessex dialect of earlier date?

2. Why, in cultivated tongues, do changes in grammar always take place slowly, while changes in vocabulary meet with but little opposition?

3. Outline (a) the rise and etymology of "its;"

(b) The substitution of "-s" for "-th" as the termination of the 3rd person singular, present indicative.

4. How do you account for the downfall of the Anglo-Norman French in England?

5. "But as it was political events that had brought about the degradation of the English language, so it was to political events that its gradual rise in importance and estimation was mainly due."

Show how this was the case.

6. State the principle known as "sequence of tenses." Give examples.

7. Give examples of debasement in words of English use. How do you account for this?

8. Show clearly the relation and purpose of each clause in the following:—

" For *who would bear*
 The insolence of office and the spurns
That patient merit of the unworthy takes,
But that the dread of something after death,
 The undiscovered *country* from whose bourne
 No traveller returns, *puzzles* the will,
 And makes us rather bear those ills we have
Than fly to others that we know not of ? "

9. Parse the italicized words in the foregoing selection.

FIRST CLASS.

COMPOSITION (Principles.)

Time—One and one-half hours.

A

Again the procession advanced. The road descends a slight declivity, and the glimpse of the city is again withdrawn behind the intervening ridge of Olivet. A few moments, and the path mounts again, it climbs a rugged ascent, it reaches a ledge of smooth rock, and in an instant the whole city bursts into view. As now the dome of the Mosque El-Aksa rises like a ghost from the earth before the traveller stands on the ledge, so then must have risen the Temple tower; as now the vast enclosure of the Mussulman sanctuary, so then must have spread the Temple courts; as now the gray town on its broken hills, so then the magnificent city with its background—long since vanished away—of gardens and suburbs on the western plateau behind. Immediately below was the Valley of the Kedron, here seen in its greatest depth as it joins the Valley of Hinnom, and thus giving full effect to the great peculiarity of Jerusalem seen only on its eastern side—its situation as of a city rising out of a deep abyss. It is hardly possible to doubt that this rise and turn of the road,—this rocky ledge,—was the exact point where the multitude paused again, and " He, when He beheld the city, wept over it." 5 10 15

1. (a) What is the topic of the paragraph ?
 (b) How does each sentence give prominence to this topic ?
2. (a) What is the impression the author wishes to convey ?
 (b) Show specifically how the arrangement of details strengthens this impression.
 (c) To what mental attitudes does the author appeal ? Illustrate.
3. (a) How and why is the movement retarded in lines 3-5 ?
 (b) What is the purpose of using verbs of motion to portray objects at rest ? Illustrate your answer from the selection.
4. (a) Account for the use of the connectives in sentence 3.
 (b) What is the value of the dash in the paragraph ?
 (c) What is gained by the quotation in the last sentence ?

5. (a) What are the rhetorical devices used in sentence 4 ?
 (b) To what do they contribute in this sentence ?
 (c) What are the uses of this type of sentence ?
6. (a) Select examples of essential, decorative and phrase epithets and of alliteration and assonance. Give the rhetorical value of these.
 (b) In connection with these discuss the suitability of the diction to the theme.

B

It may be worth while to remind our readers that the Temple Bar which Heriot passed was not the arched screen, or gateway, of the present day, but an open railing, or palisade, which, at night, and in times of alarm, was closed with a barricade of posts and chains. The Strand also, along which he rode, was not, as now, a continued street, although it was beginning already to assume that character. It still might be considered as an open road, along the south side of which stood various houses and hotels belonging to the nobility, having gardens behind them down to the water-side, with stairs to the river for the convenience of taking boat; which mansions have bequeathed the names of their lordly owners to many of the streets leading from the Strand to the Thames. The north side of the Strand was also a long line of houses, behind which, as in St. Martin's Lane, and other points, buildings were rapidly arising; but Covent Garden was still a garden, in the literal sense of the word, or at least but beginning to be studded with irregular buildings. All that was passing around, however, marked the rapid increase of a capital which had long enjoyed peace, wealth, and a regular government. Houses were rising in every direction; and the shrewd eye of our citizen already saw the period not distant, which should convert the nearly open highway on which he travelled into a connected and regular street, uniting the court and the town with the city of London.

Compare selections A and B as to descriptive effectiveness and style.

FIRST CLASS.

ESSAY.

NOTE.—This essay—about sixty lines in length—will be considered a test of the candidate's powers to write English rather than a proof of his knowledge of the subject written upon. Legible writing and correct spelling, punctuation and paragraphing will be regarded as indispensable.

Time—One hour and 30 minutes.

Select any *one* of the following:

1. The Custom-house Inspector.—*Hawthorne*.
2. Coleridge as a talker.—*Carlyle*.
3. The meaning of the term Nature.—*Mill*.
4. The Lady Hermione's Story.—*Scott*.
5. The presentation of Nigel to the King.—*Scott*.
6. King James and Nigel at the death of the Stag.—*Scott*.

CONSTITUTIONAL HISTORY.

Time—Two Hours.

1. Compare the executive in England, with the executive in the United States, under the following heads:

- (a) Selection, tenure of office, relation to parliament, relation to the supreme authority.
- (b) Contrast the situation when a difference of opinion arises between the legislature and the executive.
- (c) Contrast the educating effects upon the people.
- (d) Name the present head of each executive.

2. "The House of Commons in England is what Washington strove to create in America—an electoral college of the picked men of the nation."

Show that this is true of the House of Commons, and show wherein the electoral college is short of the ideal.

3. "The Commons guides the Premier, and he leads them. He is to them what they are to the nation." Justify the statement.

4. The possibility of a change of ministry produces three great evils:—

1st: It brings in on a sudden, new persons and untried persons to preside over a policy.

2nd: It keeps present ministers indifferent.

3rd: It may easily cause a mischievous change in policy.

Criticise these statements.

5. Write briefly on the history of the growth, development and power of the Commons from the time of Henry VII to the year 1688.

6. Outline the Canadian constitution respecting:—

- (a) The distribution of the legislative powers entrusted to the Federal and Local legislatures.
- (b) The disallowance of Provincial acts.

7. Cite cases and give the decisions as to jurisdiction:—

- (a) In the matter of escheats and forfeitures.
- (b) In regard to the liquor traffic.
- (c) In regard to the licensing and taxing of Insurance Companies.

8. Give the name and constituency of each of the North-West Members of Parliament, and the names of the Senators.

9. What was the numerical distribution of the representatives in Parliament at Confederation and how was additional representation provided for?

FIRST CLASS.**GENERAL HISTORY.***Time—Two Hours.*

1. "The age of Pericles forms the most brilliant period of Athenian history, and one of the most illustrious eras in the history of the world."

Compare it with the age of Augustus under the heads: Freedom of the people, æsthetic growth, intellectual growth. Give approximate date of each period.

2. Through the names of Hildebrand, Charlemagne, Gregory VII, Henry IV and V of Germany, John of England and Innocent III, show the growth and influence of the temporal power of the Papacy during the Middle Ages.

3. Discuss the effect of the Crusades upon (a) the commerce; (b) the feudalism; (c) the chivalry; and (d) the intellectual development of Europe.

4. The French Revolution and the English Civil War were each responsible for the death of a sovereign. Account for the fact that in the one case the death of the sovereign was equivalent to a declaration of war with the whole of Europe, while, in the other, there was scarcely a protest.

5. "The reign of Queen Elizabeth is in every respect one of the greatest eras in English History."

Show this to be true from the following standpoints: Industrial, Political, Intellectual, and Commercial.

6. (a) Give reasons for considering Marathon one of the most important battles in history.

(b) Locate the battlefield. Give date.

7. Sketch three of the great events or circumstances which mark the transition period between Mediæval and Modern times, and show the influence of each on the world's history.

FIRST CLASS.**GEOGRAPHY.***Time—Two Hours.*

1. State the Nebular Theory and cite a number of facts which tend to prove it.

2. (a) Describe briefly all the circumstances which combine to produce the short, cold days during a Temperate Zone winter.

(b) How would the seasons in the Temperate Zone be affected by gradually increasing the equatorial diameter of the earth and decreasing its polar diameter?

3. (a) Account for the differences in the movements of the atmosphere over the Indian and Middle Atlantic Oceans.
 (b) The trade-winds of the Atlantic Ocean produce deserts and rainy belts. Locate these and show how it is possible for the same winds to produce these opposite effects.
4. Compare the configuration of the sea bottom with that of the land and note the agencies which have contributed in producing resemblances and differences.
5. Explain, by aid of diagrams, the cause of tides. Account for their direction and the variations in their height.
6. Describe briefly the deposits found on the bottom of the sea and state the inferences that may be drawn from the characteristics of each class.
7. "The position of mountain chains is a matter of vast importance in relation to the welfare of man and the solution of many of the most important problems in history." (*Ritter*.)
 Show that this statement is true of any two of the following chains:—
 Alleghanies, Himalayas, Alps.
8. By a comparison of the earth's land masses show that in none of them are the distinctions between highland and lowland so sharply drawn as in the Americas.
9. What inferences regarding the distribution of life may be drawn from the characteristics of the Oceanic, African and North American biological regions?

FIRST CLASS.

CHEMISTRY.

Time—Two hours.

1. (a) Show by means of a simple experiment that when two or more substances are brought together under certain conditions an entirely new compound may be formed. Briefly outline the theory which offers an explanation of this phenomenon.
 (b) Give illustrations showing that heat, light and electricity may be an effect as well as a cause of chemical action.
2. Describe minutely the laboratory preparation of small quantities of any two of the following:—
 Marsh-gas, Sodium Hydrate, Nitric Acid.
3. Explain the chemical reaction that occurs in the different methods adopted to render hard water soft.
4. (a) Compare the chemical and physical properties of Hydrogen and nascent Hydrogen, Oxygen and Ozone, Charcoal and Graphite.
 (b) Show experimentally the use that may be made of charcoal as an absorbing, deodorizing and reducing agent.

5. Describe, giving equations, what will occur in each of the following experiments :—

- (a) A current of Hydrogen gas is passed through a tube containing heated Copper oxide.
- (b) A current of Carbon dioxide is passed through a solution of Calcium hydrate.
- (c) A current of Sulphuretted hydrogen is passed through a solution of Copper sulphate.

6. A test tube is known to contain one of the following substances in solution, Caustic Potash, Potassium Iodide, Arsenic, or Hydrochloric Acid. How would you determine which of these is present ?

7. "The chemical properties which force themselves upon our attention most prominently in whatever field of chemistry we may be working are those which are known as acid properties and basic properties." Explain this statement.

8. A jet of Hydrogen is ignited in a jar containing the Oxygen obtained from the complete decomposition of 20 grams of Potassium Chlorate. When all the Oxygen is used up the jet is removed—

- (a) Find the weight of the resultant compound.
- (b) What weight of Zinc was used to produce the Hydrogen that was burned ?

(K = 39.1 ; Zn = 65 ; Cl = 35.5 ; O = 16 ; H = 1 ; S = 32.)

FIRST CLASS.

BOTANY.

NOTE:—The presiding examiner shall deliver all the specimens to one-third of the candidates at the beginning of the examination, transfer them to another third at the beginning of the second hour, and to the remaining third at the beginning of the third hour. Candidates are requested not to injure the specimens.

Time—Three Hours.

1. (a) What is a plant cell ?
 (b) In what way do they contribute to the growth of the plant ?
 (c) When and why do they change their shape ?
 (d) How are new cells formed ?
2. Define tissues. What is the basis of their classification ? State the uses of each of the tissue systems.
3. Describe a fern under the headings, root, stem, leaf, spores, propagation.
4. Compare exogenous and endogenous stems as to internal and external structure and mode of growth.
5. Distinguish between a perfect flower and a complete flower. How may a perfect flower be incomplete ? Name the uses of the different parts of the essential organs of a perfect flower.

6. Describe and draw the chief branching systems.
7. What is bark? What are its divisions? In what way is it different from wood? What causes the bark of a tree to break or crack?
8. Classify the thorns and hairs which appear on plants. Describe their growth. State their uses.
9. Show that the apple (fruit) is a development of an apple blossom.
10. Describe, using diagrams, the forms of dehiscence in syncarpous fruits.
11. In what way may a bud be considered an incipient (a) flower, (b) leaf, (c) branch? Trace the development of the bud into a branch. Describe the methods of bud folding. Why do not all leaf buds develop?
12. Give the phylotaxis of specimen A.
13. Make an analysis of specimen B.
14. Identify specimen C. Name the characteristics of the order to which it belongs. Name other plants of the same order.

FIRST CLASS.

PHYSICS.

Time—Two and one-half hours.

1. (a) Show how the specific gravity of a quantity of sand may be ascertained.
(b) Describe the construction of an hydrometer, state the principles governing its use, and show how a rise or fall in the mercury of the thermometer or barometer will affect its reading.
2. Three bodies are thrown vertically upwards. The first began to fall at the end of the third second; the second rises 256 feet before falling; the third has a velocity of 100 feet at the end of the third second. Determine the original velocity of each. (Acceleration due to gravity is 16 feet.)
3. A standing tree is said to possess energy.
(a) How was this energy acquired?
(b) How may it be transformed into kinetic energy?
(c) Will the kinetic energy resulting from the transformation be mechanical or molecular? Explain.
4. Give a scientific explanation of the causes which produce any three of the following phenomena:—Dew, summer frosts, lightning, rainbows, mirages, geysers.
5. Write a brief description of the phonograph and show how it differs essentially from the telephone in construction and operation.

6. Show how temperature, atmospheric pressure and wind affect the velocity of sound.

7. A convex lens is placed in the path of a horizontal beam of light. The light is thrown upon a white screen erected in a dark room.

- (a) By means of a diagram show the path taken by the light. Where is the light brightest? Why?
- (b) If a transparent picture is placed behind the lens show where the screen must be placed to obtain a distinct image.
- (c) Compare the image formed in (b) with the original picture and account for resemblances and differences.
- (d) If the picture is removed and a circular opaque disk is placed some distance in front of the lens, describe and account for the properties of the shadow formed.
- (e) How will the shadow be affected by moving (a) the lens, (b) the screen? Why?

8. What is a solar spectrum? How is it obtained? What inferences regarding the properties of light may be inferred from it?

9. Cells are combined into batteries either to secure a greater E. M. F. or to diminish the internal resistance.

- (a) Explain the meaning of the term E.M.F.
- (b) What is the cause of the internal resistance?
- (c) How must cells be combined to produce these results?

10. Describe the process of electroplating.

FIRST CLASS.

ALGEBRA.

Time—Three hours.

NOTE—Candidates must obtain at least 34 per cent. on each section.

A

1. Resolve into factors any two of the following:

- (1) $25a^4 + 5a^3 - a - 1$.
- (2) $(a-b)^3 + (b-c)^3 + (c-a)^3$.
- (3) $(a-b)^4 + a^4 + b^4$.

2. If $2s = a + b + c$ show that $(s-a)^2 + (s-b)^2 + (s-c)^2 + s^2 = a^2 + b^2 + c^2$
And if $y + z = ax$, $z + x = by$, $x + y = cz$, show that

$$\frac{1}{1+a} + \frac{1}{1+b} + \frac{1}{1+c} = 1$$

3. Define an Algebraic fraction. Show the kinds of numbers your definition includes.

- (1) Deduce the rule for the multiplication of fractions.
- (2) Work any two of the following:

(a) Add $\frac{1}{(a-b)(a-c)} + \frac{1}{(b-c)(b-a)} + \frac{1}{(c-a)(c-b)}$

$$(b) \text{ Simplify } \frac{\left(\frac{a-b}{a+b}\right)^3 + 3\left(\frac{a-b}{a+b}\right)^2 + 3\left(\frac{a-b}{a+b}\right) + 1}{\left(\frac{a+b}{a-b}\right)^3 + 3\left(\frac{a+b}{a-b}\right)^2 + 3\left(\frac{a+b}{a-b}\right) + 1}$$

- (c) If $\frac{a_1+a_2x}{a_2+a_3y} = \frac{a_2+a_3x}{a_3+a_1y} = \frac{a_3+a_1x}{a_1+a_2y}$ then each fraction $= \frac{1+x}{1+y}$ if $a_1+a_2+a_3$ be not zero. If $a_1+a_2+a_3=0$, what would you say of the value of each fraction?

4. Solve any two of the following problems:

- For what values of x will each of $x^3+7x^2+2x-40$; $x^3-4x^2-31x-70$; or $x^3+9x^2+8x-60$ vanish?
- If $x^3-8x^2+21x-18=0$, find the values of x .
- If the roots of $x^3-6x^2-4x+24=0$ are in A.P., find them.
- Reduce $\frac{3x^3-3x^2y+xy^2-y^3}{4x^2y-5xy^2+y^3}$ to its lowest terms.
- If $x+z=y+3$; $x(y+z)=2+yz$; and $x^2+y^2+z^2=29$ determine the values of x , y and z .

B

5. When are the numbers a , b and c in A.P., in G.P., in H.P., respectively? Examine if a , b , c may be any numbers whatever. Insert n geometric means between a and c . Examine if n may be any number whatever in the above.

6. Solve any two of the following:

- From a certain point a man travelled 88 miles by walking 16 miles the first day and increasing each day's walk by 4 miles. How many days was he walking?
- In an Arithmetical Progression $s=pn+qn^2$ for all values of n : find the m th term.
- Sum to n terms the series $1.2+2.3+3.4+4.5+\&c.$
- If z be the Harmonic mean between a and b , show that $\frac{1}{z-a} + \frac{1}{z-b} = \frac{1}{a} + \frac{1}{b}$

7. Find the number of permutations of n different things taken r at a time.

- What are the limitations with respect to r ?
- If $r=n$ what form does the result take?
- If n be not all different find the number of Permutations taken all together.

8. Solve any two of the following:

- From 12 policemen a patrol of 4 is to be chosen. On what fraction of the possible patrols will a particular man be chosen?
- Find the m th term in the expansion of $(1-x+x^2-x^3+x^4-\dots)(1+x+x^2+x^3+x^4-\dots)$
- There are n points in space, of which p are in one plane, and there is no other plane which contains more than three of them. How many planes are there each of which contains three of the points?

FIRST CLASS.

EUCLID.

*Time—Three hours.**NOTE—Candidates must obtain at least 34 per cent. on each section.***A**

1. (a) Prove that if two angles and a side of one triangle be respectively equal to two angles and the corresponding side in another triangle, the two triangles shall be equal in every respect. I. 26.
 (b) What are the geometrical concepts treated of in Books I, II and III?
 (c) If two triangles have two sides in one equal to the corresponding two sides in the other and have the angles opposite one pair of the equal sides equal, examine the circumstances under which the triangles will be equal.
 (d) The bisectors of the angles of a triangle meet in one point.
2. (a) Prove that in obtuse angled triangles, the square on the side opposite the obtuse angle is equal to the sum of the squares on the other two sides increased by twice the rectangle contained by either of those sides and the projection on it of the other side. II. 12.
 (b) State the general proposition of which (a) is a particular case. What propositions are included in your statement?
 (c) The squares on the sides of a trapezium are together equal to the squares on the diagonals increased by four times the square on the line joining the middle points of the diagonals.
 (d) From (c) show that it may be inferred that the squares on the diagonals of a parallelogram are equal to the squares on its sides.
3. (a) Prove that if from a point without a circle a secant and a tangent be drawn to the circle, the rectangle contained by the secant and its external segment shall be equal to the square on the tangent. III. 36.
 (b) Examine the cases which may arise as the point moves from the centre through the circumference to any point outside the circle.
 (c) State the propositions in which the relation between the segments of two chords of a circle is discussed.
 (d) In a certain lake the tip of a lotus bud was seen 9 inches above the surface of the water; forced by the wind, it gradually advanced and was submerged at a distance of 36 inches. Calculate the depth of the lake.

B

4. (a) Inscribe a circle in a given triangle. IV. 4.
 (b) Describe the circles which will touch each of three given straight lines.
 (c) A, B, C, are the angular points of a triangle. F, D, E, are the points where the circle touches AB, BC, CA respectively. Show that $AF + BD + CE = FB + DC + EA = AF + BC = BD + CA = CE + AB$.
 (d) Draw a straight line which would bisect the angle between two straight lines which are not parallel. (The lines must not be produced to meet.)

5. (a) Prove that if the vertical angle of a triangle be bisected by a straight line which also cuts the base, the internal segments of the base shall have the same ratio to one another which the sides of the triangle have. VI. 3.
- (b) What is the subject matter of Books V and VI respectively?
- (c) When are four magnitudes said to be proportional?
- (d) ABC is a triangle whose base BC is bisected at D; angles ADB, ADC are bisected by DE, DF, meeting AB, AC at E and F. Prove EF parallel to BC.

FIRST CLASS.

TRIGONOMETRY.

Time—Three Hours.

1. An isosceles triangle has the vertical angle three times each of the equal angles. Find the number of degrees, grades, and units of circular measure in the vertical angle.

2. Explain the use of the signs, plus and minus, in Trigonometry. Deduce the Sin and Cos of $\frac{\pi}{3}$, 50° and 135° . Write the remaining ratios of the last.

3. Express the Tan of half an angle in terms of the Sin and Cos of the whole angle; hence find an expression for $\tan 15^\circ$.

A gentlemen's cane is 3 ft. 4 in. in length. When placed upright on a level plain it cast a shadow $(6\frac{2}{3} + \sqrt{\frac{10}{3}})$ feet. Find the altitude of the sun.

4. Deduce geometrically $\sin(A - B)$. Assuming corresponding values for Sin and Cos of $(A + B)$ and $(A - B)$ deduce any two of the following:—

$$(a) \tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}.$$

$$(b) \cos 2A = \cos^2 A - \sin^2 A = 1 - 2\sin^2 A = 2\cos^2 A - 1.$$

$$(c) \cos A - \cos B = 2\sin \frac{A+B}{2} \sin \frac{A-B}{2}.$$

$$(d) \sin 3A = 3\sin A - 4\sin^3 A.$$

5. Prove any two of the following:—

$$(a) \sin 50^\circ - \sin 70^\circ + \sin 10^\circ = 0.$$

$$(b) \operatorname{cosec} A (\sec A - 1) + \sin A = \cot A (1 - \cos A) + \tan B.$$

$$(c) \sin 18^\circ = \sqrt{\frac{5}{4} - 1}.$$

$$(d) \frac{\sin(A - B)}{\cos A \cos B} = \tan A - \tan B.$$

6. Define the common logarithm of a number, and investigate the rule for performing multiplication by means of logarithms.

Having given $\log 2$, and $\log 3$, deduce $\log 4$, $\log 5$, $\log 6$, $\log 8$, $\log 9$.

7. Perform any three of the following operations by logarithms.

(a) Multiply 12345 by 54321.

- (b) Divide 1 by 3.1416.
 (c) Raise to the 11th power 0.12345.
 (d) Extract the 5th root of 0.10153 and the square root of $\frac{3}{4}$.

8. How do the tabular logarithms of the trigonometrical ratios differ from the real logarithms of these quantities?

What is the relation between $\text{Log tan } A$ and $\text{Log cot } A$?

Prove $\text{Log tan } A + 2\text{Log cos } A = \text{Log cot } A + 2\text{Log sin } A$.

9. Solve the following right angled triangle having given C the right angle, $a = 111.86$, $c = 123.45$.

| NUMBER. | log. | ANGLE. | LOG. |
|---------|-------|------------------------|----------------|
| 10153 | 00661 | $4^{\circ} 18' 1/2''$ | $\sin 8.87574$ |
| 11186 | 04480 | $20^{\circ} 41' 1/2''$ | $\tan 9.57716$ |
| 12345 | 09151 | $26^{\circ} 06'$ | $\sin 9.64346$ |
| 20000 | 30103 | $11^{\circ} 23'$ | $\sin 9.82026$ |
| 30000 | 47712 | $45^{\circ} 41' 1/2''$ | $\sin 9.85467$ |
| 31416 | 49715 | $50^{\circ} 00'$ | $\sin 9.88425$ |
| 31830 | 50285 | $63^{\circ} 54'$ | $\sin 9.95328$ |
| 54321 | 73497 | $65^{\circ} 00'$ | $\cot 9.66867$ |
| 56070 | 74873 | | |
| 60692 | 78314 | | |
| 63288 | 80132 | | |
| 63710 | 80421 | | |
| 64971 | 81272 | | |
| 67063 | 82648 | | |
| 86603 | 93753 | | |

10. A man 5 ft. 10 inches high standing on the bank of a river observed a tree on the opposite bank to subtend an angle of 75° . He receded 20 ft.; the tree then subtended an angle of 60° . Find the height of the tree and the breadth of the river.

SECOND CLASS.

POETICAL LITERATURE.

Time—Three Hours.

A

1. What is the thesis which Goldsmith undertakes to establish in "The Traveller"?

2. Show the relation of this extract to the thesis. Criticise it.

And yet, perhaps, if countries we compare,
 And estimate the blessings which they share,

Though patriots flatter, still shall wisdom find
 An equal portion dealt to all mankind ;
 As different good, by Art or Nature given,
 To different nations makes their blessings even.

3. Show how Goldsmith's characterisation of Switzerland and its people illustrates his thesis.

4. Examine the truth of

Where wealth and freedom reign, contentment fails,
 And honour sinks where commerce long prevails.

B

I stood in Venice, on the Bridge of Sighs ;
 A palace and a prison on each hand :
 I saw from out the wave her structures rise
 As from the stroke of the enchanter's wand :
 A thousand years their cloudy wings expand 5
 Around me, and a dying Glory smiles
 O'er the far times, when many a subject land
 Look'd to the winged Lion's marble piles,
 Where Venice sate in state, throned on her hundred isles !

She looks a sea Cybele, fresh from ocean, 10
 Rising with her tiara of proud towers
 At airy distance, with majestic motion,
 A ruler of the waters and their powers ;
 And such she was ;—her daughters had their dowers
 From spoils of nations, and the exhaustless East 15
 Pour'd in her lap all gems in sparkling showers.
 In purple was she robed, and of her feast
 Monarchs partook, and deemed their dignity increased.

1. What effect is produced by the contrast in line 2 ?
2. What is the purpose of lines 3 and 4 ? How is this purpose aided by the simile ?
3. Show the use of the figures in line 5.
4. What feeling is suggested by "a dying glory smiles o'er the far times ?"
5. What is the purpose of lines 7-9 ? Show how the figures in lines 8 and 9 aid in accomplishing it.
6. Explain "sea Cybele," and comment on the appositeness of the comparison.
7. What is the effect of "and such she was," line 14 ?
8. State, in relation to the second stanza, the purpose of lines 14-18, and the special purpose of each detail of the series in these lines.

9. Describe this form of verse, and comment on its general movement, and its suitability for a poem of this nature.

C

Most sweet it is with unuplifted eyes
 To pace the ground, if path be there or none,
 While a fair region round the traveller lies
 Which he forbears again to look upon ;
 Pleased rather with some soft ideal scene, 5
 The work of Fancy, or some happy tone
 Of meditation, slipping in between
 The beauty coming and the beauty gone.
 If Thought and Love desert us, from that day
 Let us break off all commerce with the Muse : 10
 With Thought and Love companions of our way,
 Whate'er the senses take or may refuse,
 The Mind's internal heaven shall shed her dews
 Of inspiration on the humblest lay.

1. Analyse this sonnet in such a way as to exhibit clearly its matter and artistic structure.

D

All the earth and air
 With thy voice is loud,
 As, when night is bare,
 From one lonely cloud
 The moon rains out her beams, and heaven is overflow'd.

What thou art we know not ;
 What is most like thee ?
 From rainbow clouds there flow not
 Drops so bright to see
 As from thy presence showers a rain of melody.

Sound of vernal showers
 On the twinkling grass,
 Rain awaken'd flowers,
 All that ever was
 Joyous, and clear, and fresh, thy music doth surpass.

Darkling I listen ; and for many a time
 I have been half in love with easeful Death,
 Call'd him soft names in many a musèd rhyme,
 To take into the air my quiet breath ;
 Now more than ever seems it rich to die, 5
 To cease upon the midnight with no pain,
 While thou art pouring forth thy soul abroad
 In such an ecstasy !
 Still wouldst thou sing, and I have ears in vain—
 To thy high requiem become a sod. 10

Thou wast not born for death, immortal Bird !
 No hungry generations tread thee down ;
 The voice I hear this passing night was heard
 In ancient days by emperor and clown :
 Perhaps the self-same song that found a path 15
 Through the sad heart of Ruth, when, sick for home,
 She stood in tears amid the alien corn ;
 The same that oft-times hath
 Charm'd magic casements, opening on the foam
 Of perilous seas, in faery lands forlorn. 20

1. "In each poem there is a note of intense yearning—but for different objects." State these different objects and show whether each poem is characteristic of its author.

2. Show that the movement in each poem is in keeping with the mood depicted.

3. Describe the metre and rhyme-scheme of stanza I (Shelley) and state the effect of the final line.

4. Examine the suitability of "easeful," "mused," and "rich," in stanza I (Keats). Which do you consider the best line in this stanza? Why?

5. Explain "darkling," line 1; line 12; "passing," line 13; "alien," line 17.

6. What attributes of the "voice" are presented in lines 13-14? In lines 15-17? In lines 18-20? Which attribute is presented most effectively? Why?

E

Mention what is referred to in the following selections and name the poems from which the selections are taken:

1. The Niobe of Nations! there she stands,
 Childless and crownless, in her voiceless woe.

* * *

2. Thus idly busy rolls their world away;
 There are those acts that mind to mind endear,
 For honour forms the social temper here;

* * *

3. But where is he, the Pilgrim of my song,
 The being who upheld it through the past?
 Methinks he cometh late and tarries long.

* * *

4. Blazed battlement and pinnet high,
 Blazed every rose-carved buttress fair—
 So still they blaze, when fate is nigh
 The lordly line of high Saint Clair.

Complete any one of the following quotations :

Thus to relieve the wretched was his pride.

* * *

Ill fares the land to hastening ills a prey.

* * *

I saw her upon nearer view,
A Spirit, yet a Woman too !

* * *

There is a pleasure in the pathless woods,
There is a rapture on the lonely shore.

* * *

We look before and after,
And pine for what is not.

SECOND CLASS.

READING (Principles).

Time—One Hour.

1. Show the different meanings the following sentence may have according as the emphasis is placed upon, Did, your, brother, to-day : "Did you see your brother to-day ?"

2. "For even a moderate proficiency in the art of Reading two requirements are essential."

What are these requirements ? Which is the most important ? Give reasons for your opinion.

3. Divide the following words into syllables and mark the correct accent :—profile, amenable, levee, pedagogy, posthumous, concentrate, deficit, misanthropic, orgies, extant.

4. Right on our flank the crimson sun went down ;
The deep sea rolled around in dark repose ;
When, like the wild shriek from some captured town,
A cry of women rose.

"Out with those boats and let us haste away,"
Cried one, "ere yet yon sea the bark devours."
The man thus clamoring was, I scarce need say,
No officer of ours.

Our English hearts beat true ; we would not stir ;
The base appeal we heard, but heeded not ;

On land, on sea, we had our colours, sir,
To keep without a spot !

There rose in murmur from the ranks, no thought,
By shameful strength, unhonoured life to seek ;
Our past to quit we were not trained, nor taught
To trample down the weak.

- (a) Select the most emphatic word in each of ll. 3, 4, 5, 11, 15. Give reasons for your selection.
- (b) Select lines or passages from the first and last stanzas which require to be read in slow time.
- (c) What are the predominant feelings in stanza 2 ? What modes of utterance would most fitly express them ?
- (d) What modes of utterance would most fitly express the feeling in l. 2 ?
- (e) Mark by vertical lines the rhetorical pauses in the first stanza.
- (f) Distinguish between emphasis and stress, and illustrate by reference to these stanzas.

SECOND CLASS.

COMPOSITION (Principles.)

Time—One and one-half hours.

A

The household were all seated, and, externally at least, composed to devout attention, when a low knock was heard at the door of the apartment; Mistress Judith looked anxiously at her brother, as if desiring to know his pleasure. He nodded his head gravely, and looked to the door. Mistress Judith immediately crossed the chamber, opened the door, and led into the apartment a beautiful creature, whose sudden and singular appearance might have made her almost pass for an apparition. She was deadly pale—there was not the least shade of vital red to enliven features which were exquisitely formed, and might but for that circumstance, have been termed transcendently beautiful. Her long black hair fell down over her shoulders and down her back, combed smoothly and regularly, but without the least appearance of decoration or ornament, which looked very singular at a period when head-gear, as it was called, of one sort or other, was generally used by all ranks. Her dress was of pure white, of the simplest fashion, and hiding all her person except her throat, face and hands. Her form was rather beneath than above the middle size, but so justly proportioned and elegantly made, that the spectator's attention was entirely withdrawn from her size. In contradiction of the extreme plainness of all the rest of her attire, she wore a necklace which a duchess might have envied, so large and lustrous were the brilliants of which it was composed; and around her waist a zone of rubies of scarce inferior value.

1. Give the subject of each sentence. What does each contribute to the central idea in the paragraph ?

2. What particular impression of Lady Hermione does the author here desire to convey? Mention the chief devices employed in setting forth this idea and state the purpose of each.

3. What is the rhetorical name of sentence 4? What is the use of this type of sentence? Why is the dash inserted after "pale?" What difference, if any, would follow from the substitution of a period for this dash?

4. Distinguish "decoration" and "ornament," line 12; "dress," line 14 and "attire," line 19; "simplest fashion," line 15 and "extreme plainness," line 19.

B.

They both followed the earl without speaking, and were in the second anteroom when the important annunciation of the ushers, and the hasty murmur with which all made ample way as the company repeated to each other,—“The Duke,—the Duke!” made them aware of the approach of the omnipotent favourite.

He entered, that unhappy minion of court favour, sumptuously dressed in the picturesque attire which will live for ever on the canvas of Vandyke, and which marks so well the proud age, when aristocracy, though undermined and nodding to its fall, still, by external show and profuse expense, endeavoured to assert its paramount superiority over the inferior orders. The handsome and commanding countenance, stately form, and graceful action and manners of the Duke of Buckingham, made him become that picturesque dress more than any man of his time. At present, however, his countenance seemed discomposed, his dress a little more disordered than became the place, his step hasty and his voice imperative.

All marked the angry spot on his brow, and bore back so suddenly to make way for him, that the Earl of Huntingdon, who affected no extraordinary haste on the occasion, with his companions, who could not, if they would, have decently left him, remained as it were by themselves in the middle of the room, and in the very path of the angry favourite. He touched his cap sternly as he looked on Huntingdon, but unbonneted to Heriot, and sunk his beaver, with its shadowy plume, as low as the floor, with a profound air of mock respect. In returning his greeting, which he did simply and unaffectedly, the citizen only said,—“Too much courtesy, my lord Duke, is often the reverse of kindness.”

1. What would be gained or lost by treating this selection as one paragraph?

2. Show the advantages and disadvantages of the structure of sentence 5.

3. Show the value of the frequent use of modifiers in paragraph 2.

4. Select a figure of rhetoric from the first sentence in paragraph 2 and show its use and appropriateness.

5. Compare the choice and order of particulars in description B with those in description A and indicate the suitability of each.

SECOND CLASS.

ESSAY.

NOTE—This essay—about sixty lines in length—will be considered a test of the candidate's powers to write English rather than a proof of his knowledge of the subject written upon. Legible writing and correct spelling, punctuation and paragraphing will be regarded as indispensable.

Time—One hour and 30 minutes.

Select any *one* of the following :

1. The Lady Hermione's Story.
2. The old Clock Maker and his Shop.
3. The Presentation of Nigel to the King.
4. The Customs of the London Apprentices.
5. King James and Nigel at the death of the Stag.

SECOND CLASS.

GRAMMAR.

Time—Two hours.

1. Classify adverbs. Give reason for this classification.
2. Make a list of the inflections of the verb and show the use of each form in the expression of our thoughts.
3. (a) Distinguish as to their function in clauses, descriptive, restrictive and impersonal pronouns. Illustrate.
(b) Show the functions of attributive, appositive and predicative adjectives in a sentence.
4. State clearly the meaning and grammatical value of *would* in each of the following sentences :—
(a) His listless length at noontide would he stretch.
(b) The evil that I would not that I do.
(c) He would not listen when I advised him.
(d) I would that all my foes were thus cut off.
5. Distinguish and illustrate the different values of the suffix "ing."
6. What is the value of the English termination "en" in :—
(a) Nouns ?
(b) Verbs ?
(c) Adjectives ?
Give examples to illustrate your answer.
7. Analyse any three words so as to show their formative and root elements. State the value of each element.

8. Analyse fully, "I feel inclined to ask you whether he went or not."

9. "The voice of Enid rang
Clear through the open casement of the hall,
Singing: and as the sweet voice of a bird
Heard by the lander in a lonely isle
 Moves him to *think what* kind of bird it is
 That sings so delicately *clear*, and make
 Conjecture of the plumage and the form;
 So the sweet voice of Enid moved him."
- (a) Classify this sentence.
 - (b) Separate into clauses and show the exact function and relation of each.
 - (c) Parse the italicised words.

SECOND CLASS.

HISTORY—British and Canadian.

Time—Two Hours.

1. "The National Debt of England is a safeguard against riots and rebellions."
 - (a) Discuss this statement, and support your views by historical references.
 - (b) Give the origin of the National Debt.
2. (a) Compare the despotism of Henry VII and Henry VIII, with the despotism of the Stuart period, showing similarities and differences, and supporting your statements by historical references.
 - (b) Account for the fact that in the one case the people were comparatively satisfied, and that in the other they rebelled.
 - (c) Show that George III was the last English sovereign to exhibit traces of despotism.
3. (a) Under what circumstances were India and South Africa acquired?
 - (b) Show generally how the Colonies contribute to the greatness of the Empire.
4. Give a somewhat detailed account of the causes that led to the rise of any two of the following: Puritanism, Lollardism, The Chartist Movement, Prison Reform.
5. Connect with the "Eastern Question,"
 - (a) "The Crimean War, 1855," and
 - (b) "The Cretan Trouble, 1897."
6. Compare the work and character of Sir Charles Metcalfe with that of Lord Sydenham, and show the influence of each on the political affairs of Canada.

7. Write on the appointment, functions and powers of the Cabinet and the Senate.

Give the names of the Members of Parliament for the several Electoral Districts in the N.W.T.

SECOND CLASS.

GENERAL HISTORY.

Time—Two hours.

1. Describe ancient Egyptian civilization under the following heads :—Government, Caste, Priests, Architecture, Science.

2. State very briefly the leading idea of civilisation among,

- (a) The Persians,
- (b) The Hebrews,
- (c) The Romans,
- (d) The Spartans,
- (e) The Athenians.

3. (a) Give the date, cause and result of the Peloponnesian war.

(b) Conceive the effect on "the betterment of man's estate" had the result been contrariwise.

4. Describe Roman Life (time of the Emperors) under the following heads :—Dress, food, baths, amusements, slaves, houses.

5. "In the fifth century of our era many things portended the fall of Rome." Show how these things contributed to this end.

6. Write notes on any two of the following :—

The Phœnicians as colonizers, Spartan education, Carthage as a rival of Rome, the beneficial effects of Alexander's conquests.

7. Account for the rapid development of political science in Greece.

8. Select from English History a period which nearly coincides in your opinion with the age of Pericles and briefly compare them.

SECOND CLASS.

GEOGRAPHY.

Time—Two hours.

1. If the earth's axis were inclined at an angle of 50° and the direction of its annual and diurnal motions were immediately reversed, show what changes would be produced in the climate of—

- (a) The North-West Territories,
- (b) The Amazon Valley,
- (c) Northern Africa.

2. Show to what extent the shape and coast line of North America and Eurasia are determined by the arrangement of their highlands.

3. Draw a map of the Torrid Zone in the Eastern Hemisphere, marking in—

- (a) Ocean currents, periodic and constant winds;
- (b) Four British possessions;
- (c) Four commercial centres;
- (d) Eight export products.

4. (a) Show how the settlement, industries and commerce of the basins of the St. Lawrence and Nile have been largely determined by the character of these rivers.

(b) Show how the relief and contour of the North American continent are being affected by its rivers.

5. Write an account of the export commerce of Montreal, Alexandria, or Buenos Ayres under the following headings:—

- (a) Chief exports;
- (b) Regions of production;
- (c) Conveyance to sea-boards;
- (d) Probable destination.

6. How do you account for the fact that the inhabitants of India and China and those of England and France have lived side by side for centuries, each retaining their own language and customs, while in the New World different nationalities are becoming gradually assimilated?

7. Write a brief description of any two of the following industries, pointing out how and where the raw materials are obtained, and outlining the processes followed in preparing them for market:—salt, coal oil, silk, cotton, rubber, sponges.

8. Why is the maintenance of Turkish ascendancy in Constantinople deemed of such importance by the great European Powers?

SECOND CLASS.

AGRICULTURE AND BOTANY.

NOTE:—The presiding examiner shall deliver all the specimens to one-third of the candidates at the beginning of the examination, transfer them to another third at the beginning of the second hour, and to the remaining third at the beginning of the third hour. Candidates are requested not to injure the specimens.

Time—Three Hours.

1. Wheat growing in the N.W. Territories:—

- (a) Outline the different operations in preparing virgin soil for a wheat crop. What is the value of each?
- (b) What precautions should be taken to prevent the presence of smut in the crop?
- (c) Write notes on the proper time for cutting, stooking, stacking and threshing the grain. In each case give reasons.

2. (a) What are *Noxious* weeds? Point out their evil effects upon farm and garden crops.

- (b) Describe the French weed or the Wild Oat. How is the former propagated? How are the seeds of the latter disseminated? How may French weed be eradicated? How may Wild Oats be destroyed to enrich the soil?
3. Write notes on sheep or swine under the following heads:—Principal varieties, value as a farm product, care and feeding, treatment while fattening.
4. "Dairying is becoming one of the most important branches of farming in this country."
 (a) Why is the dairying industry considered of so much importance?
 (b) State, giving reasons, the conditions under which this industry may be made profitable.
5. (a) What is meant by irrigation? Why is it necessary to irrigate certain districts of the Territories?
 (b) Why is sufficient rainfall preferable to irrigation?
6. Describe the roots of the turnip and the strawberry as follows:—Classification, mode of growth, rootlets, length of life and uses.
7. Distinguish Pollination and Fertilisation. Describe the process of Fertilisation. How do the relative positions of the anthers and stigma affect Pollination?
8. Point out resemblances and differences in structure of any two of the following:—
 (a) The leaves of the silverweed and the garden pea.
 (b) The underground portions of the potato and the Canada thistle.
 (c) The wheat stalk and the corn stalk.
9. Distinguish Aestivation and Inflorescence. Illustrate by diagram the raceme and corymb forms of inflorescence. Name two examples of each.
10. "Carbonic acid gas is a plant food." What are its principal sources? Outline the processes by which it is assimilated by the plant.
11. Why does sap run more readily in spring than in autumn?
12. Give the leaf arrangement of specimen A.
13. Identify specimen B. What are the characteristics of its order? Name other plants of the same order.

SECOND CLASS.

PHYSICS.

Time—Two and one-half hours.

1. (a) State the height to which water may be raised by a syphon.
 (b) If the area of the cross-sections of the arms of a syphon are as

- 2:1 instead of as 1:1, how would its action be affected? Explain.
- (c) Show clearly upon what the rapidity of flow in a syphon depends. Does altitude above sea level affect it? Why?
- (d) State and account for the limit of action of a syphon whose arms are of equal length.
2. (a) The spout of a lifting pump, used to raise sulphuric acid from a tank, is 12 feet from the surface of the liquid, which is 14 feet deep. If the barometer stands at 28 inches and the Sp. G. of sulphuric acid and mercury is = 1.8 and 13.6 respectively, find how many feet of acid may be pumped out.
- (b) If the top of the tank, which is but partially filled, were sealed air-tight, how would the action of the pump be affected?
- (c) What alterations are necessary in the construction of the pump in order to obtain a continuous flow?
3. (a) Find the height of a cliff if a stone dropped from its top reaches its base in four seconds.
- (b) If at the end of the third second the stone is acted upon by a force that has a tendency to carry it in a horizontal direction away from the cliff at a rate of 48 feet per second, show by means of lines how you would determine the velocity and direction of the stone at the end of the next second.
4. "One body is hotter than another when the average kinetic energy of each molecule in it is greater than in the other."
 "Molecular potential energy is transformed in the act of chemical combination into heat."
 Explain these statements.
5. Two pipes, A and B, connect an air-tight iron tank placed in the basement of a factory, with an open one placed on the second floor. Pipe A opens near the bottom of the lower tank, while pipe B opens near its top. In the upper tank both pipes open a short distance below the surface of the water, which completely fills the lower tank, the pipes and half the upper tank. If heat is applied to the bottom of the lower tank, describe and account for the manner in which the water will circulate. Indicate the position of the pipes that will secure the most complete and rapid circulation. Give reasons. (In your explanation make use of diagrams showing the position of tanks and pipes).
6. (a) Why is a hollow box placed under the strings of a violin?
- (b) Distinguish pitch, intensity and quality of sounds. Illustrate by reference to the key-board of a piano.
- (c) Why is the sound made by the voice heard more distinctly at the end of a speaking tube than in the open air?
7. Describe the construction of a radiometer and state the inferences that may be drawn from its movements when exposed to the sunlight.
8. Show how the illuminating power of an incandescent lamp may be measured,

9. Show how the direction and relative strength of electric currents may be ascertained.

10. (a) Describe the construction of a voltaic cell and examine the physical and chemical conditions accompanying the generation of the current.

(b) Enumerate some of the practical uses made of voltaic cells.

SECOND CLASS.

ARITHMETIC.

Time—Three hours.

1. (a) By diagrams with necessary explanations prove that $\frac{5}{7}$ of $2 = \frac{2}{7}$ of 5
 - (b) The sum of three fractions is .84. If 3 times the first, 12 times the second and 20 times the third are all equal, find the fractions.
 - (c) Before reducing a vulgar fraction, already in its lowest terms, to a decimal, show how to determine the class to which the decimal will belong.
2. A farmer's wheat crop averages per acre $\frac{3}{5}$ of what his oat crop does, but he receives 50% more per bushel for it. If he receives \$1800 for his entire crop of 60 acres of oats and 40 acres of wheat, find the value of an acre of wheat.
3. A real estate agent purchased three lots. The second cost half as much again as the first and the third half as much as the second. He sold the first at a gain of 10%, the second at a loss of $16\frac{2}{3}\%$, and the third at a price just covering his net loss. Find the cost of the three lots, if the third was sold for \$1080.
4. A wholesale firm buys three kinds of tea at 30c., 45c., and 60c. respectively. What quantities of each may be taken to fill an order for 720 lbs. at 45c., the wholesaler's profit being $12\frac{1}{2}\%$?
5. A merchant insured his stock and buildings for $\frac{3}{5}$ of their value, paying a premium of $3\frac{1}{2}\%$. When his policy expired he decided to take on an additional risk of \$800, but as a frame building had been erected on the next lot the Insurance Company increased the rate to $3\frac{87}{100}\%$. If the new premium exceeded the old by \$29.40, find the amount of the new policy.
6. A farmer gave in payment for a binder two notes for the same amounts due in 6 mos. and 12 mos. respectively, the interest on the second note being payable half-yearly. In calculating the amount of his first payment he thought the notes were bearing 10% interest instead of 8%, and as a consequence forwarded \$1.20 too much.
- (a) Find the face value of the notes.
 - (b) What is the cash value of the machine, money being worth 8%?
 - (c) If the company gives the farmer credit for the \$1.20 what amount will he owe at the end of the year?

7. The metal in a trophy composed of silver and gold in the proportion of 8:1 is valued at \$114. If gold is 30 times as valuable as silver, find the value of the gold in the trophy.

8. (a) An architect drafts a plan of a dwelling on a scale of $1/8$ of an inch to the foot. The dining-room as shown on the plan is $3\frac{3}{4}$ inches by $2\frac{1}{4}$ inches. If the owner decides to decrease the length of this room by 6 ft., without altering its area, what will be its dimensions on the new plan?

(b) What will it cost to cover the floor of this room with carpet costing \$1.50 per yard? The carpet is 30 inches wide, contains a pattern 9 inches long, and the strips run lengthwise.

9. Show how you would compute the radius of a cylindrical cistern if you had given its capacity in bbls. and its altitude in feet.

10. A circular wire hoop which encloses an area of 154 sq. inches is forced into the shape of an equilateral triangle. Find the area of the triangle.

SECOND CLASS.

ALGEBRA.

NOTE:—Candidates must obtain at least 34 per cent. on each section.

Time—Three hours.

A

1. Divide $a^3 + b^3$ by $a + b$. State the observations that will enable you to write the quotient of $a^3 - 3a^2 + 3a + b^3 - 1$ by $a + b - 1$ and the product of $(2a + b)^2 - (2a + b)(a + 2b) + (a + 2b)^2$ by $3(a + b)$.

2. Expand $(a + b)^2$. Use your result to write the expansion of $(a + b + c)^2$. Use these expansions to prove:—

(1) $(2a - b)^2 + 2(a - 2b)(2a - b) + (a - 2b)^2$ divisible by 3; by $a - b$; or by $3(a - b)$.

(2) If $a = 2y + 3z - 5x$; $b = 2z + 3x - 5y$ and $c = 2x + 3y - 5z$ then $a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$ vanishes.

3. Find the product of $(a + b)(a - b)$. State the property of numbers involved in this. Use this result to determine:—

(1) The product of $(a + b + c)(a + b - c)(a - b + c)(b + c - a)$.

(2) The factors of $a^4 + a^2b^2 + b^4$ and $a^4 + b^4 - 7a^2b^2$.

4. What is the distinction between an Algebraic fraction and an Arithmetical fraction?

(1) Prove if

$$\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \text{etc.}, \text{ then will } \frac{pa + qc + re + \text{etc.}}{pb + qd + rf + \text{etc.}} = \frac{a}{b} = \text{etc.}$$

(2) Prove that if $\frac{a+b}{a-b} = \frac{b+c}{b-c} = \frac{c+a}{c-a}$ then $a+b+c=0$.

5. Distinguish between a real surd and an imaginary surd; between similar surds and dissimilar surds.

(1) Prove that if $a + \sqrt{b} = m + \sqrt{n}$ where a and m are rational and \sqrt{b} and \sqrt{n} are irrational prove $a=m$ and $b=n$.

(2) "Since $3 + \sqrt{4} = 2 + \sqrt{9}$ therefore $3=2$ and $4=9$." Detect the fallacy in this reasoning.

B

6. State the axioms most frequently used in the solution of equations. Point out a limitation to any one of these. State the general principle in respect to the number of roots an equation may have.

7. (1) Prove if $\frac{a}{b} = \frac{c}{d}$ then $\frac{a}{c} = \frac{b}{d}$

Apply this principle in the solution of

$$\frac{ax^2 + bx + c}{px^2 + qx + r} = \frac{ax + b}{px + q}$$

8. Solve (1) $x^2 + \sqrt{x^2 + 3x + 7} = 23 - 3x$.

$$(2) \quad \begin{cases} xy(x+y) = 240 \\ x^3 + y^3 = 280 \end{cases}$$

9. What factors of two or more expressions will compose their H.C.F. and what ones their L.C.M.?

(1) The sum of two numbers is 4225, and their H.C.F. is 845; find two pairs of number which will satisfy these conditions. Show that there are none others.

10. In a race A runs at the uniform rate of 300 yards per minute. B runs over the first half of the course at the rate of 280 yards a minute, and over the last half of the course at the rate of 320 yards a minute. Which wins?

(1) If the winner comes in 15 seconds before the other, what is the length of the course?

SECOND CLASS.

EUCLID.

NOTE:—Candidates must obtain at least 34 per cent. on each section.

Time—Three hours.

1. Prove that if a side of a triangle be produced, the exterior angle is equal to the sum of the two interior opposite angles and the sum of the three interior angles is equal to two right angles. I. 32.

2. (a) Describe a parallelogram equal to a given rectilinear figure, and having an angle equal to a given angle. I. 45.
 (b) Describe a triangle equal to a given rectilinear figure.
 (c) ABCD is a trapezoid AB and CD being parallel; the diagonals AC and BD meet at O. Prove the triangle AOD equal to the triangle BOC.
 (d) ABC is any triangle, D any point in AB; find a point E in BC produced such that the triangle DBE may be equal to the triangle ABC.
3. (a) Prove that if a straight line be divided internally into any two segments, the square on the straight line is equal to the squares on the two segments increased by twice the rectangle contained by the segments. II. 4.
 (b) Determine the maximum and minimum areas of the rectangle contained by the segments.
 (c) If the square on the perpendicular from the vertex of a triangle on the base be equal to the rectangle contained by the segments of the base the vertical angle is right.
4. (a) The sum of the squares on two sides of a triangle is double the sum of the squares on half the base and on the line joining the vertical angle and the middle point of the base.
 (b) The centre of a fixed circle is the middle point of the base of a triangle. If the vertex of the triangle be on the circumference, the sum of the squares on the two sides of the triangle is constant.

B

5. (a) Prove that equal chords of a circle are equally distant from the centre. III. 14.
 (b) Define chord and secant of a circle.
 (c) Find the locus of the centre of all equal chords in a circle.
6. (a) Prove that the angles in the same segment of a circle are equal. III. 21.
 (b) Define segment of a circle, angle in a segment.
 (c) If the line AD bisect the angle A in the triangle ABC, and BD be drawn without the triangle making an angle with BC equal to half the angle BAC, show that a circle may be described about ABCD.
7. (a) Prove that if two straight lines cut one another so that the rectangle contained by the segments of the one is equal to the rectangle contained by the segments of the other, the four extremities of the two straight lines are concyclic. (Converse III. 35.)
 (b) Examine the proposition as the point of intersection moves from the centre to any position outside the circle.
 (c) If through any point in the common chord of two circles which intersect one another, there be drawn any two other chords, one in each circle, their four extremities shall be concyclic.

Time—Three hours.

‘ Ah ! my Lord Arthur, whither shall I go ?
Where shall I hide my forehead and my eyes ?
For now I see the true old times are dead,
When every morning brought a noble chance,
And every chance brought out a noble knight. 5
Such times have been not since the light that led
The holy Elders with the gift of myrrh.
But now the whole ROUND TABLE is dissolved
Which was an image of the mighty world ;
And I, the last, go forth companionless, 10
And the days darken round me, and the years,
Among new men, strange faces, other minds.’
And slowly answered Arthur from the barge:
‘ The old order changeth, yielding place to new,
And God fulfils Himself in many ways, 15
Lest one good custom should corrupt the world.
Comfort thyself : what comfort is in me ?
I have lived my life, and that which I have done
May He within Himself make pure !’

3. Examine the suitability of the sound effects to the theme in the following:

The bare, black cliff elang'd round him as he based
His feet on juts of slippery crag that rang
Sharp-smitten with the dint of armed heels.

I heard the ripple washing in the reeds,
And the wild water lapping on the crag.

4. "Self-reverence, self-knowledge, self-control,
These three alone lead life to sovereign power.
Yet not for power (power of herself
Would come uncall'd for but to live by law,

Acting the law we live by without fear ; 5
And, because right is right, to follow right
Were wisdom in the scorn of consequence."

* * * "I woo thee not with gifts.
Sequel of guerdon could not alter me
To fairer. Judge thou me by what I am 10
So shalt thou find me fairest. Yet, indeed,
If gazing on divinity disrobed
Thy mortal eyes are frail to judge of fair,
Unbias'd by self-profit, oh ! rest thee sure
That I shall love thee well and cleave to thee, 15
So that my vigour, wedded to thy blood,
Shall strike within thy pulses, like a god's,
To push thee forward thro' a life of shocks,
Dangers, and deeds, until endurance grow
Sinew'd with action, and the full-grown will, 20
Circled thro' all experiences, pure law,
Commeasure perfect freedom."

- (a) Express in your own words clearly and concisely the argument of Pallas.
 - (b) Do you believe in the sentiment of this passage as a motive to action ?
 - (c) Why did the promise of Pallas fail and that of Aphrodite succeed ?
5. (a) The Palace of Art is "a sort of allegory." State its object, and the lesson which the poet desires to teach.

O God-like isolation which art mine,
I can but count thee perfect gain,
What time I watch the darkening droves of swine
That range on yonder plain.
In filthy sloughs they roll a prurient skin,
They graze and wallow, breed and sleep ;
And oft some brainless devil enters in,
And drives them to the deep.

- (b) What phase of character is revealed in these two stanzas ?
 - (c) Show the relation of these stanzas to the object of the poem.
 - (d) State the use of the chief figure of speech in these stanzas. Discuss its effectiveness here.
 - (e) Describe clearly in your own words your picture of the scene sketched in the following stanza :—
And one, a foreground black with stones and slags,
Beyond, a line of heights, and higher
All barr'd with long white cloud the scornful crags,
And highest, snow and fire.
6. Name the persons referred to in the following selections, and the poems from which the selections are taken :—

- (a) White-breasted like a star.
Fronting the dawn he moved ; a leopard skin
Droop'd from his shoulder, but his sunny hair
Cluster'd about his temples like a God's.

* * *

- (b) At length I saw a lady within call,
 Still than chisell'd marble standing there;
 A daughter of the gods, divinely tall
 And most divinely fair.

* * *

- (c) And there the Ionian father of the rest;
 A million wrinkles carved his skin;
 A hundred winter's snow'd upon his breast,
 From cheek and throat and chin.

* * *

- (d) She lock'd her lips: she left me where I stood:
 "Glory to God," she sang, and past afar,
 Thridding the sombre boskage of the wood,
 Toward the morning-star.

* * *

- (e) My spirit beats her mortal bars,
 As down dark tides the glory slides,
 And star like mingles with the stars.

7. Write from memory at least eight consecutive lines from any one of the following: *The Voyage*, *Sir Galahad*, *Morte d'Arthur* *A Dream of Fair Women*.

THIRD CLASS.

READING. (Principles).

Time—One hour.

1. Show to what extent the expression of the thought of a passage depends upon correct articulation.

2. What judgment shall I dread, doing no wrong?
 You have among you many a purchased slave,
 Which, like your asses, and your dogs, and mules,
 You use in abject and in slavish parts,
 Because you bought them: shall I say to you, 5
 Let them be free, marry them to your heirs?
 Why sweat they under burdens? let their beds
 Be made as soft as yours, and let their palates
 Be seasoned with such viands? You will answer,
 "The slaves are ours:" so do I answer you: 10
 The pound of flesh, which I demand of him,
 Is dearly bought; 'tis mine, and I will have it:
 If you deny me, fie upon your law!
 There is no force in the decrees of Venice.
 I stand for judgment: answer; shall I have it? 15

- (a) Select the most emphatic words in the last six lines.
 (b) Quote passages from the selection that require the rising inflection.
 (c) Illustrate through lines 10 to 14 what is meant by pitch and force,

- (d) Distinguish grammatical and rhetorical pauses. Indicate the rhetorical pauses in lines 10 to 15.

3. What are the principal defects which lead to imperfect articulation? Illustrate your answer by reference to the following words: Arithmetic, literature, geography, history, memories, children, accurate, judgment, usually, developed.

4. Divide the following words into syllables and mark the accent: Accentuate, profile, menace, beginning, excise, development, extant, inevitable, tyrannous, continuity.

THIRD CLASS.

COMPOSITION (Principles.)

Time:—One and one-half hours.

A

"So, taking the dagger in his hand, he softly stole in the dark to the room where Duncan lay; and as he went he thought he saw another dagger in the air with the handle towards him, and on the blade and at the point of it drops of blood; but when he tried to grasp at it, it was nothing but air, a mere phantasm proceeding from his own hot and oppressed brain and the business he had in hand.

"Getting rid of his fear, he entered the king's room, whom he dispatched with one stroke of his dagger. Just as he had done the murder, one of the grooms, who slept in the chamber, laughed in his sleep, and the other cried 'Murder,' which woke them both; but they said a short prayer; one of them said 'God bless us!' and the other answered 'Amen,' and addressed themselves to sleep again. Macbeth, who stood listening to them, tried to say 'Amen,' when the fellow said 'God bless us!' but, though he had most need of a blessing, the word stuck in his throat, and he could not pronounce it.

"Again he thought he heard a voice which cried, 'Sleep no more; Macbeth doth murder sleep, the innocent sleep, that nourishes life.' Still it cried, 'Sleep no more,' to all the house, 'Glamis hath murdered sleep, and therefore Cawdor shall sleep no more, Macbeth shall sleep no more.'

- (1) Give the topics of the paragraphs and show their sequence.
- (2) How does the author maintain the interest in the first paragraph?
- (3) How do these paragraphs comply with the laws of narration?
- (4) What side of Macbeth's character is portrayed in these paragraphs? Show by what rhetorical devices it is portrayed.
- (5) Bearing in mind the nature of this selection, compare as to suitability "softly stole," and "stole softly," line 1: "Done the murder" and "committed the murder," line 8: "Which cried" and "crying," line 16. If the phrase "taking the dagger in his hand" were placed after "lay" in line 2, what, if any, would be the change in meaning?

B

"It comes flowing softly through the midmost privacy and deepest heart of a wood which whispers it to be quiet; while the stream whispers back again from its sedgy borders, as if river and wood were hushing one another to sleep. Yes; the river sleeps along its course and dreams of the sky and the clustering foliage, amid which fall showers of broken sunlight, imparting specks of vivid cheerfulness, in contrast with the quiet depth of the prevailing tint. Of all this scene the slumbering river has a dream picture in its bosom. Which, after all, was the most real—the picture or the original?—the objects palpable to our grosser senses, or their apotheosis in the stream beneath? Surely the disembodied images stand in closer relation to the soul. But both the original and the reflection had here an ideal charm; and, had it been a thought more wild, I could have fancied that this river had strayed forth out of the rich scenery of my companion's inner world; only the vegetation along its banks should then have had an Oriental character."

- (1) What is the central idea of this paragraph?
- (2) Mention the chief rhetorical devices employed in setting forth this idea, and state the purpose of each.
- (3) Show how the following assist in developing the main topic of the first two sentences: "privacy," "whispers," "dreams of the sky."
- (4) What is the force of the interrogation in sentence 4? Account for the semicolons after "yes" line 4, and "world" second last line.
- (5) Give the effect of "Back again," line 3; "Yes," line 4: "Broken sunlight," line 6. Distinguish "slumbering," line 7, and "sleeping;" "fancied," line 13, and "imagined."

THIRD CLASS.

ESSAY.

NOTE—This essay—from thirty to sixty lines in length—will be considered a test of the candidate's power to write English rather than a proof of his knowledge of the subject written upon. Legible writing and correct spelling, punctuation and paragraphing will be regarded as indispensable.

Time—One and one half hours.

Select any one of the following and write the story:

1. The Old Manse and the Grounds.
2. The River and the Battle Ground.
3. Drowne's Wooden Image.
4. The Trial (Merchant of Venice.)
5. King Lear,

THIRD CLASS,

GRAMMAR.

Time—Two hours.

1. "Figures have been defined and illustrated, *not* with a view to giving the student something *new to put* into his writing; *for* the charm of any production would be entirely lost if the writer should feel that, having just finished a chapter on figures of speech, he must keep on the lookout for a chance to *put* in a simile, or ask himself *what* would be a good metaphor for this thought, or how this idea could be *best* personified."

- (a) Classify this sentence, giving reasons.
- (b) Write out each subordinate clause and state clearly and fully its grammatical function and the word or words which it modifies.
- (c) Give the grammatical function and relation of the italicized words.
- (d) Parse the words ending in "ing."

2. What kinds of co-ordination are found in the following sentences? Define each class. Men *may* come and men *may* go, but I go on forever. I will *go* myself or *send* a substitute. He did no work, therefore he received no pay. I refused it then, nor would I accept it now.

3. Why are verb phrases necessary? By example show their uses.

4. Looking at each sentence as a whole give the value of (part of speech) the italicized part:—I remained to *learn what action would be taken*. *Believing that he would accept the nomination* they adjourned for an hour. You should not object to *what he proposes*.

5. In each of the following state the relation of the italicized word to the rest of the sentence:—*John* is studious. That was my *John*. Be good, dear *John*. My friend *John* did that. He introduced his friend, *John*. I believe that *statement* to be false. He made the stick *straight*. They called him a *coward*.

6. State the uses of the relative pronoun in sentence structure and give an example of each.

7. State the uses of participles in composition. Give the rules governing these uses. Illustrate by examples.

8. Give the objective case, plural, of which; the possessive plural of the masculine demonstrative pronoun of the third person; the second person singular past subjunctive active of write; the imperfect particle of choose: the positive degree of first.

THIRD CLASS.

HISTORY—British and Canadian.

Time—Two hours:

1. Outline the successive stages in the development of Responsible Government in Canada from the Treaty of Paris to the administration of Lord Elgin.

2. State the conditions that rendered the Canada Trade Act a necessity.
3. Explain the problem of "Representation by Population." Show how it was solved.
4. Write explanatory notes on "The Washington Treaty," and on "The Ashburton Treaty."
5. Sketch the history of the English nation from "The Great Charter" to the death of Richard II (1215 to 1399), under the following heads:
 - (a) Constitutional and parliamentary growth;
 - (b) Changes within the church;
 - (c) Rise of the masses of the people.
6. Compare "The Act of Union" (English history) and "The Act of Union" (Canadian history) under the following heads:
 - (a) Necessity for it;
 - (b) Opposition to it;
 - (c) Advantages resulting from it.
7. State the essential facts which indicate the intellectual growth of the nation during the Tudor period.
8. Give a summary of the arguments of the Anti-Corn-Law League.

THIRD CLASS.

GEOGRAPHY.

Time—Two hours.

1. Why are the days longer in Summer at Regina than New Orleans? Which of these localities has the warmer, drier, and healthier climate? Why?
2. What geographical conditions render the Ontario peninsula a more productive region than the North-Western portion of Australia? Describe the flora or fauna of one of these regions.
3. Locate St. Helena, Fort William, Crete, Rossland, Khartoum and Yokohama. State some interesting facts about each.
4. Why is Europe the only continent free from deserts? Locate the principal desert regions in the other continents and account for the presence of any one of them.
5. Draw an outline of North America showing (a) in what zones the continent is situated, (b) the location and direction of the ocean currents and prevalent winds which influence the climate of the continent, (c) vertical sections or profiles of the continent Eastward from Vancouver (showing the prairie steppes) and Northward from New Orleans, (d) the isothermal line running through the Southern part of the N.W.T.

6. Name three British possessions between the Tropic of Cancer and the Equator. Enumerate the principal products of two of these.

7. Compare the primary highlands of South America and Asia, under the following headings :—location, length, altitude, width, arrangement of chains, plateaus, slopes.

8. Show to what extent the physical features and latitude of India or Scandinavia have determined its boundaries, industries and state of civilisation.

9. What geographical conditions have retarded the settlement of the prairie regions of Canada.

THIRD CLASS.

AGRICULTURE AND BOTANY.

NOTE :—The presiding examiner shall deliver all the specimens to one-third of the candidates at the beginning of the examination, transfer them to another third at the beginning of the second hour, and to the remaining third at the beginning of the third hour. Candidates are requested not to injure the specimens.

Time—Three hours.

1. (a) In what ways do water, plants and earth-worms assist in the formation of soil ?
 (b) "Clay is not plant food, yet land containing much clay is usually rich in plant food." Explain.
 (c) Why is it necessary in farming operations to take into consideration the colour, weight and texture of the soil ?
 (d) Shew how continuous cropping affects the soil. In what ways may fertility be restored to exhausted soils ?
2. (a) What are the surface and vegetative indications of a want of drainage ?
 (b) In what respects is underdraining more helpful to the soil than surface draining ?
3. How does each of the following affect plants: Seed formation, drouth, cloudy weather, frost, hot winds ?
4. Write notes upon the proper management of an oat or potato crop as follows :
 Oats : Suitable soil, place in the rotation of crops, preparation of the soil, seeding and harvesting.
 Potatoes : Suitable soil, preparation of the soil, planting, cultivation of the soil during growth, harvesting and storing.
5. With respect to their effect upon crops, how are insects classified ? Give the different stages of insect life. In which period are they most destructive ? Is this true of the potato bug ? Describe the methods usually adopted in the application of insecticides.

6. (a) Compare the mode of growth in the stems of the Strawberry, Morning Glory, Pea.
(b) How do the stem and branches of a plant contribute to its life purpose?
7. Outline the structure of a leaf. Distinguish between foliage and storage leaves. Give examples of anomalous leaves. State their uses.
8. (a) Distinguish sterile and fertile flowers.
(b) Name and tell the uses of the different divisions of the stamen and the pistil.
(c) How does nature provide for the reproduction of plants having sterile flowers?
9. What is a fruit? Show how the fruit of the plum, maple and raspberry conform to your definition.
10. Compare specimens A and B as to margin, outline, base, shape, venation, surface and arrangement.
11. Identify specimen C. Name other plants of the same order and give the characteristics of the order.

THIRD CLASS.

PHYSICS.

Time—Two and one-half hours.

1. (a) What common properties have all kinds of matter?
(b) Under what conditions will two trains be in a state of (1) relative motion, (2) relative rest?
2. (a) Draw a diagram of an air-pump and explain its action.
(b) Why is it impossible to obtain a complete vacuum by means of an air pump?
(c) Does the completeness of the vacuum depend in any way upon the capacity of the barrel of the pump? Explain.
(d) If the direction in which the valves open were reversed show what would take place when the pump is worked.
3. Explain,—
(a) Why a balloon rises in the air, while iron sinks in water.
(b) Why the velocity of a falling body is independent of its mass.
(c) Why bullets are made of lead instead of wood.
(d) Why the course of a cannon ball projected in a horizontal direction is not straight.
4. "A syphon is an instrument used for transferring a liquid from one vessel to another *through the agency of atmosphere pressure.*"
(a) Explain this statement making use of a diagram.
(b) Will a syphon work in a vacuum? Why?

5. (a) Describe the construction of a mercurial barometer.
 (b) Why must one of the ends of the tube used be closed?
 (c) If there is some air in the tube above the mercury how will it affect the reading of the barometer?
 (d) Will the barometer rise or fall when taken down into a mine? Why?
6. (a) The utmost force a man can exert is a little more than 200 lbs. If he wishes to raise a block of stone weighing 400 lbs., show how he may do so by using (1) a fixed and a movable pulley combined, (2) a lever.
 (b) Explain the meaning of the terms force, energy, and work, by referring to what takes place while the stone is being raised by the use of either contrivance.
7. (a) Show how to find the specific gravity of a solid body heavier than water.
 (b) Find the specific gravity of a goblet composed of 15 ounces of silver and 4 ounces of gold. Sp. G. of gold = 19.36, Sp. G. of silver = 10.5.
8. State the three laws of motion and describe simple experiments in verification of any two of them.
9. An open U-shaped tube connects two bottles A and B in such a way that the ends of its arms are but a short distance from the bottom of each. Bottle A is half full of water and is so corked that air can enter only through the end of the tube in B. The mouth of bottle B is open. If the bottles are placed under the receiver of an air-pump explain, making use of a figure showing the apparatus, the action that takes place,—
 (a) When the air is being exhausted.
 (b) When it is being admitted.
 (c) When the connecting tubes break in the centre during the second experiment.

THIRD CLASS.

ARITHMETIC.

Time—Three hours.

1. (a) Show clearly how to change a vulgar fraction into the form of a decimal.
 (b) Multiply $.4 \times .004$ without reducing to vulgar fractions.
 (c) State and prove the general rule governing the multiplication of decimals.
2. Edmonton coal is $16\frac{2}{3}\%$ heavier than water, and a cubic foot of water weighs 1000 ounces. If a cubic foot of coal when broken occupies $1\frac{1}{3}$ cubic feet of space show how to find the height of a bin 6 ft long and 3 ft. 6 in. broad so that it may contain exactly $1\frac{3}{4}$ tons.

3. An agent remitted to a shipper, in settlement of a sale of 4000 bus. of potatoes, \$2829.65, after deducting his commission of 5% and \$286.35 for freight charges. Find (a) the selling price of a bushel of potatoes, (b) the agent's commission.

4. A bankrupt merchant has liabilities amounting to \$10,000. One of the creditors, after the business is wound up at an expense of 10% of the assets, receives \$2520 as his share. If he received 63c. on the dollar, find (a) the amount of his account, (b) the amount the merchant required to become solvent, (c) the amount of the expenses.

5. If one thousand laths cover 70 yards of surface and $12\frac{1}{2}$ lbs of nails nail them on, what will it cost to lath the ceiling of a church having the following inside dimensions: length 40 ft.; breadth 24 ft.; height of side walls 12 ft; height from the floor to the middle point of the ceiling 28 ft.; (the laths are nailed to the rafters.) Labor costs $4\frac{1}{2}$ c. per yard, nails 6c. per lb., and lath \$3 per M.

6. A rancher sold two horses, which he considered to be of equal value, as follows:—for the first he got a promissory note for \$60 due in 2 mos., for the second, \$30 cash and a promissory note for \$30 due in 4 mos. and bearing interest at 6%. He immediately had the notes discounted at 1% per month. What did he realize in cash for each horse?

7. A merchant pays \$72 to insure a \$2400 stock of goods. If the rate of insurance is 4% and a fire, which completely destroys the stock, occurs on the day the policy is taken out, estimate (a) the merchant's loss (b) the insurance company's loss.

8. A locomotive burns a ton of coal while going 75 miles. How many times will the driving wheel, which has a radius of 1 ft. 9 in., revolve for every cwt. of coal used?

9. (a) By means of an example show how you would proceed to find the area of a field having the form of a parallelogram.
(b) Find the dimensions of the top of a circular table whose area is $1\frac{1}{2}$ sq. yards.

THIRD CLASS.

ALGEBRA.

Time—Three hours.

1. Find by multiplication the square of $a+b$. Use your result to write the square of $a-b$; of $a+b+c$; and of $2a+3b$.

2. Expand $\frac{1}{1+a}$ to four terms. State the observations that will enable you to write the m th term of this expansion.

3. Find the product of a^2+ab+b^2 into a^2-ab+b^2 . Use your result to determine:

- (1) The product of $a^4 + a^2b^2 + b^4$ into $a^4 - a^2b^2 + b^4$.
 (2) The quotient of $(a+b)^4 + (a+b)^2(a-b)^2(a-b)^4$ by $(a+b)^2 + (a+b)(a-b) + (a-b)^2$. Simplify this quotient.

4. Divide $8y^6 - x^6 + 21x^3y^3 - 24xy^5$ by $3xy - x^2 - y^2$. State in the form of an equation the relation between the terms of division; hence find by division the numerical value of $x^5 - 18x^4 - 20x^3 + 16x^2 + 58x + 63$ when $x = 19$.

5. Define the term Equation. Deduce the method of transposition in the solution of Equations.

$$\text{Solve (1) } \frac{6x+1}{15} - \frac{2x-4}{7x-16} = \frac{2x-1}{5}$$

$$\begin{aligned} \text{(2) } 2x - 3y &= 3 \\ 3y - 4z &= 7 \\ 4z - 5x &= 2 \end{aligned}$$

6. Prove that if

$$3(a^2 - b^2) - [2a^2 - 2\{b^2 + ab + b(b - \overline{a+b})\}] = 0$$

then $a^2 = b^2$. Must $a = b$ also?

Prove that if

$$x + 2y + 3z - 14 = 2x + 3y + z - 11 = 3x + y + 2z - 11 = 0$$

then will $x - 1 = y - 2 = z - 3 = 0$.

7. A and B are equal owners of a flock of sheep. They agree to divide it. A took 72; B took 92, and paid A \$35. Find the value of the flock of sheep.

8. A pony and a saddle are worth \$65. Three-fourths of the value of the saddle is equal to one-third of the value of the pony. Find the value of the saddle.

9. A number of boys join to purchase a ball. Before payment 5 boys withdrew. The share of each was then half as much again. Find the number of boys. Why cannot the price of the ball be found?

THIRD CLASS.

EUCLID.

Time—Three hours.

1. (a) Prove that if two sides and the contained angle of one triangle be equal to two sides and the contained angle of another triangle the two triangles shall be equal in every respect. I. 4.
- (b) Enunciate the axiom on which the proof depends.
- (c) Distinguish between a theorem and a problem; and between an axiom and a postulate.
- (d) Show how the distance across an impassable morass may be measured.

2. (a) Show how to draw a straight line perpendicular to a given straight line from a given point without it. I. 12.
 (b) What property of a circle is used in the construction?
 (c) Two weights are suspended from a ceiling. Are they parallel?
 (d) Perpendiculars are dropped from the angular points of an equilateral triangle. Determine the size of the angles at their intersection. (Assume the perpendiculars pass through the same point.)
3. (a) Prove that any two sides of a triangle are greater than the third side. I. 20.
 (b) Show how this is acted upon in every day life.
 (c) Prove proposition (a) by bisecting one of its angles.
 (d) Prove that in a figure of n sides the sum of $n-1$ sides is greater than the n th side.
4. (a) Prove that if a straight line cutting two other straight lines makes the alternate angles equal to one another the two straight lines shall be parallel. I. 27.
 (b) What is the essential quality of parallelism? How does Euclid show that a pair of parallel lines may exist?
 (c) Are two lines which will not meet in either direction necessarily parallel?
 (d) Prove that if the diagonals of a quadrilateral bisect each other the quadrilateral is a parallelogram.
5. (a) Show how to draw through a given point a straight line parallel to a given straight line. I. 31.
 (b) Prove that only one such line can be drawn.
 (c) Through the angular points of a triangle straight lines are drawn parallel to the opposite sides, and produced till they meet. Compare the area of the triangle thus formed with the original one.
6. (a) Show how to describe a parallelogram that shall be equal to a given triangle and have one of its angles equal to a given angle. I. 42.
 (b) If the angle be 90° what kind of parallelogram would be described?
 (c) Describe a triangle equal to a given parallelogram and having a base angle of given dimension.
 (d) Describe a parallelogram one-half as large again as a given triangle and having one angle equal to a given angle.
7. (a) Show how to describe a square of given dimensions.
 (b) Point out six properties of a square.
 (c) Determine the size of the angles at the intersections of the diagonals of a square.
 (d) Describe a square having given the diagonal. The diagonal is $20\sqrt{2}$ feet long; find the area.

THIRD CLASS.

BOOK-KEEPING.

Time—Two hours.

1. Explain the meaning of:—Negotiable Paper; Days of Grace; Tariff; Taking Stock; Smith, Fergusson Co. (Ltd).

2. (a) Write a draft containing the following particulars:—date, May 12th, 1897; amount, \$60; payee, W. Brown; time, at sight; drawer, P. Thomas; drawee, W. Trant.

(b) For such a draft give the journal entries made by the payee, the drawer and drawee, in their respective books.

3. J. Jones, Banff, has just commenced business in the boot and shoe line. Write his circular letter intended for public distribution.

4. January 1st, 1897, R. Brown began business with the following assets and liabilities:—

| | |
|----------------------------|----------|
| Assets: Cash on hand | \$500 00 |
| Sugar, 3000 lbs @ 4c..... | 120 00 |
| Tea, 800 lbs @ 40c..... | 320 00 |
| Green's note for..... | 500 00 |

Liabilities:

Note in Bank of Montreal, due March 1st, 1897.... 400 00

Jan. 2nd. Bought of Murphy & Co, 400 lbs. lard @ 13c. per lb., 140 lbs. soap @ 7c., 1000 lbs. pork @ 7c. Gave in payment 1000 lbs. sugar @ 6c., cash \$21 80, and a note at 60 days for \$50. .

Jan. 3rd. Sold Sharp & Co., on their note at 2 months bearing interest at 8% per annum, 2000 lbs. sugar at 6c. Discounted the note immediately at 1% per month.

Jan. 4th. Green prepaid his note, discount allowed \$12.

Feb. 1st. Prepaid note in the Bank of Montreal, discount allowed 1% per month.

Feb. 1st. Goods on hand, \$451.80.

(a) Write the negotiable note referred to on Jan. 2nd.

(b) Journalize the above items.

(c) Post these in the ledger.

(d) Close the ledger.

(e) Make out a statement, showing assets, liabilities, net gain or loss.

PUBLIC SCHOOL LEAVING EXAMINATIONS.

LITERATURE.

Time—Two hours.

A

Sweet Highland girl, a very shower
Of beauty is thy earthly dower!

Twice seven consenting years have shed
 Their utmost bounty on thy head :
 And these gray rocks ; this household lawn ; 5
 These trees, a veil just half withdrawn ;
 This fall of water, that doth make
 A murmur near the silent lake ;
 This little bay, a quiet road
 That holds in shelter thy abode 10
 In truth, together do ye seem
 Like something fashion'd in a dream ;
 Such forms as from their covert peep
 When earthly cares are laid asleep !
 Yet, dream and vision as thou art, 15
 I bless thee with a human heart :
 God shield thee to thy latest years !
 Thee neither know I nor thy peers ;
 And yet my eyes are fill'd with tears.

1. What is the purpose of ll. 1-4 ? Of ll. 5-10 ? Of ll. 11-14 ?
2. Explain ll. 13-14.
3. Why are the poet's eyes "fill'd with tears" ?
4. Give, in their connection, the meaning of the following words:
 Sweet, shower l. 1 ; consenting, l. 3 ; road, l. 9 ; peers, l. 18.
5. Why is the pronoun of the second person singular used to such an extent ?
6. Select any two figures of speech in this extract, give their names and show the use and appropriateness of each.

B

I bring fresh showers for the thirsting flowers
 From the seas and the streams ;
 I bear light shade for the leaves when laid
 In their noon-day dreams.
 From my wings are shaken the dews that waken 5
 The sweet buds every one,
 When rock'd to rest on their Mother's breast,
 As she dances about the sun.
 I wield the flail of the lashing hail,
 And whiten the green plains under ; 10
 And then again I dissolve it in rain,
 And laugh as I pass in thunder.

I am the daughter of Earth and Water,
 And the nursling of the Sky ;
 I pass through the pores of the ocean and shores ; 15
 I change, but I cannot die.
 For after the rain, when with never a stain
 The pavilion of heaven is bare,
 And the winds and sunbeams with their convex gleams
 Build up the blue dome of air, 20
 I silently laugh at my own cenotaph,—
 And out of the caverns of rain,
 Like a child from the womb, like a ghost from the tomb,
 I arise, and unbuild it again.

1. What phase of The Cloud is presented in the first stanza? In the second stanza?
2. Give names for the various labours performed by The Cloud in stanza I.
3. Explain the Metaphor in ll. 5-8. Is this poetic statement of the formation of dew correct?
4. To what does the "it" in l. 11 refer?
5. Why does The Cloud "laugh," l. 12?
6. Explain the statement made in ll. 13-14.
7. Show the relation of l. 16 to the general thought of the second stanza.
8. Explain the statement made in ll. 19-20.
9. Give the meaning of "pavilion" and "cenotaph."
10. Give examples of Alliteration in the second stanza and show its use.

C

I see the table wider grown,
 I see it garlanded with guests,
 As if fair Ariadne's Crown
 Out of the sky had fallen down ;
 Maidens within whose tender breasts 5
 A thousand restless hopes and fears,
 Forth reaching to the coming years,
 Flutter awhile, then quiet lie,
 Like timid birds that fain would fly,
 But do not dare to leave their nests ;— 10
 And youths, who in their strength elate
 Challenge the van and front of fate,
 Eager as champions to be
 In the divine knight-errantry
 Of youth, that travels sea and land 15
 Seeking adventures, or pursues,
 Through cities, and through solitudes
 Frequented by the lyric Muse,
 The phantom with the beckoning hand,
 That still allures and still eludes. 20

1. Show the appositeness of "garlanded," l. 2.
2. Explain the allusion in ll. 3-4.
3. Express clearly in your own words the thought contained in ll. 5-10.
4. What is meant by "the divine knight-errantry of youth," l. 14?
5. Explain "lyric Muse," l. 18.
6. What is "the phantom with the beckoning hand," l. 19?

D

1. Tell briefly the story of the Lord of Burleigh. What lesson, if any, does the poet intend to teach by it?
2. Complete the quotation: Then none was for a party; then all were for the state.

PUBLIC SCHOOL LEAVING.

READING (Principles).

Time—One hour.

1. State what is implied in good reading.

2. News of battle! who hath brought it?
All are thronging to the gate;
"Warder—warder! open quickly!
Man—is this a time to wait?"
And the heavy gates are opened: 5
Then a murmur long and loud,
And a cry of fear and wonder
Bursts from out the bending crowd
For they see in battered harness
Only one hard-stricken man; 10
And his weary steed is wounded,
And his cheek is pale and wan;
Spearless hangs a bloody banner
In his weak and drooping hand—
What! can this be Randolph Murray, 15
Captain of the city band?

- (a) Select the most emphatic words in the first eight lines. Give reasons.
 - (b) Indicate the lines that require the rising inflection.
 - (c) Indicate the lines that require the falling inflection.
3. Show the difference between rhetorical and grammatical pauses; show where rhetorical pauses occur in lines 5 to 12.
 4. Show what are the common faults of articulation in the italicized words: *Maria* was a *modest* young lady who nearly *always* did her *duty*. Her *memory*, however, *was* not *accurate*. She was *saucy* to her *father*, and a little *deaf* to his advice.

PUBLIC SCHOOL LEAVING.

COMPOSITION.

Time—Two hours.

1. Give sentences showing the correct use of shall, will, may, can, done; discover, invent, find.
2. (a) What determines the position of phrases and clauses in the sentence?
(b) Show whether the following sentences bring out the meaning clearly. Rewrite them when necessary: I cannot recall an incident which occurred at that time without smiling. The carriage stopped at a small gate which led by a short gravel walk to the house amid the nods and smiles of the whole party.

3. (a) Make headings for a description of any one of the following:
 "The Food of Plants." "Formation of Soil." "Fruits and their Uses." "The Uses of Rivers." "The Capture of Quebec."
 (b) Account for your arrangement of these headings.
 (c) From this outline describe the topic selected.
4. (a) Write three paragraphs upon one of the following topics: "The Battle of Waterloo." "The Trial by Combat." "The Bard." "The Hanging of the Crane."
 (b) Show the relation of these paragraphs to one another.
 (c) Show the relation of the sentences in the last paragraph to each other.
5. Mr. Robert Whatcom, Broadville, writes an application, stating his qualifications and references, to Mr. John Brown, Regina, for a position as book-keeper. Write his application and Mr. Brown's acceptance.
6. (a) What is the purpose of the Paraphrase?
 (b) Paraphrase the following:
- It fortifies my soul to know
 That, though I perish, Truth is so;
 That, howsoe'er I stray and range,
 Whate'er I do, Thou dost not change.
 I steadier step when I recall
 That, if I slip, Thou dost not fall.

PUBLIC SCHOOL LEAVING.

GRAMMAR.

Time—Two hours.

1. How do we determine the part of speech to which a word in a sentence belongs? Illustrate your answer by examples.
2. Define a preposition. In the following selection show that your definition is true for each preposition:
- Till now we quietly sailed on,
 Yet never a breeze did breathe;
 Slowly and smoothly went the ship,
 Moved onward from beneath.
3. (a) Classify conjunctions according to their uses in the following sentences: He is an honest but mistaken man who has lost home and friends. I know that she sings and dances. When the sun rises darkness disappears.
 (b) Define each class.
4. (a) Distinguish between a plural common noun and a collective noun.
 (b) Compare *late*, *cruel*, *tin*.
 (c) Write sentences showing the correct use of the principal parts of *sit*, *lay* and *see*.

5. Give examples of verbs used passively ; change them to the active form. From your examples show what is meant by voice.

6. How does a writer determine which of the sentence forms--simple, compound and complex—he will use in expressing his thought? Give examples.

7. "A man who had great riches gave what he had freely." Change each clause in this sentence into its corresponding phrase and each of these phrases into its corresponding word. Point out differences in form and meaning between clauses and phrases.

8. Correct the following sentences, giving reasons for corrections :

- (a) This is a man or a woman's voice.
- (b) I will not forgive him neither this year nor next.
- (c) Give every word and syllable their proper sound.

9. For just experience tells, in every soil,
That those who think must govern those that toil ;
And all that Freedom's highest aims can reach
Is but to lay proportionate loads on each.

- (a) Classify this sentence, giving reasons therefor.
- (b) Write out each subordinate clause and state clearly its grammatical function and government.
- (c) Parse "for," line 1 ; "that," "must govern," "that," line 2 ; "all," "that," line 3 ; "but," "to lay," line 4.

PUBLIC SCHOOL LEAVING.

SPELLING AND ORTHOEPEY.

Time—One hour.

Write the passage dictated by the presiding examiner: High School Reader page 224, "Such amidst the sacred" down to "in that reign."

(This is not to be seen by the candidates. It is to be read to them three times—the first time to enable them to gather the meaning ; the second time to enable them to write the words ; the third time for review. Candidates are not permitted to re-write the passage.)

2. Divide the following words into syllables and mark the accent :—finances, deficit, leisurely, illustrate, contrary, extraordinary, literature, vehemence, discipline, recess.

3. From each of the following primitives, form by suffixes two derivatives and give in each case the force of the addition :—sweet, friend, wed, life.

4. Write sentences showing clearly the difference in meaning between ;—clever, skilful ; displease, vex ; one, single.

5. Write the ordinary abbreviations for cash on delivery, second, Captain, October, United States ; and the ordinary contractions for Alberta, merchandise, account, junior, received,

PUBLIC SCHOOL LEAVING.

HISTORY.

Time—One and one-half hours.

1. Sketch the history of "The United Empire Loyalists," showing why they came to Canada, the sacrifices they made, what assistance was given them, and how they affected the political history of Canada.
2. (a) Give the name of the present Governor General of Canada. State by whom he is chosen, his term of office, and his chief functions.
(b) Give the name and title of address of the present Prime Minister of Canada; name three members of his Cabinet.
3. Distinguish: Customs, Excise; Free Trade, Protection; Protective Tariff, Revenue Tariff.
4. (a) Outline, as to cause and result, the American Civil War.
(b) What was the effect of this war upon England?
(c) What was its effect upon Canada?
5. Arrange the following in order of time:—
(a) The introduction of the penny postage.
(b) The trans-Atlantic cable.
(c) The opening of the first railway.
(d) The use of the electric telegraph.
(e) The use of ocean steam-vessels.
(f) Show the effect of any two of these upon the trade and commerce of England, giving their dates.
6. Select from English History an individual, whose national work corresponds most nearly with William Lyon Mackenzie in Canadian History, and justify your selection by a comparison of their lives and work.

PUBLIC SCHOOL LEAVING.

GEOGRAPHY.

Time—One and three-quarters hours.

1. Explain why it is necessary to correct a watch while travelling eastward along the Canadian Pacific Railway.
2. Why is Ontario the leading manufacturing Province in the Dominion? Is there any possibility of Assiniboia becoming a rival of Ontario in this respect? Give reasons for your answer.
3. (a) Name the chief exports of Newfoundland, British Columbia, the East Indies, and Cape Colony.
(b) What countries export linen, silk, cheese, wool, and dates in large quantities?

4. Describe the appearance, dress, mode of life, and customs of the Hindoos, Mexicans, Turks or Boers.

5. Draw an outline map of Africa, marking on it the boundaries of the Torrid Zone, the primary axis of the continent, the three largest rivers, the chief desert, forest and grazing regions, the capital of Egypt, two sea-port towns and Johannesburg.

6. Account for the differences in climate, soil, and products between the north-western and south-eastern portions of Australia.

7. Describe briefly the animal life of (a) the selvas (b) the North Frigid zone, and account for differences in their nature, size, covering, colour and habits.

PUBLIC SCHOOL LEAVING.

NATURE STUDY AND AGRICULTURE.

Time—Two hours.

1. (a) Write a brief description of any two weeds found growing in the Territories.
(b) Outline the most effective methods followed in destroying weeds.
2. "The plowing in of green crops is one of the most effective methods of enriching the surface soil." Enumerate some of the most important "green manures," and explain the process of applying them.
3. What are the benefits derived from the rotation of crops?
4. What is the origin of smut? What steps should be taken to prevent its appearance in a crop?
5. Write notes on the proper care and feeding of dairy cows.
6. Name and describe the wild flower that first appears in spring.
7. Show how the form and structure of (a) the wolf, (b) the duck, are adapted to their modes of life.

PUBLIC SCHOOL LEAVING.

HYGIENE AND TEMPERANCE.

Time—One and one-half hours.

1. (a) What is meant by "perfect ventilation?"
(b) Describe a mode of properly ventilating an ordinary country school room.
2. (a) Why is the use of Tobacco particularly harmful to the young?

- (b) In adults what organs of the body are most likely to be affected by its use? How are they affected?
3. Describe a mode of reviving a person apparently drowned.
4. Write hygienic notes on the care of the eye, and the care of the teeth.
5. (a) Describe the functions of the stomach and the liver in the process of digestion.
(b) State the effects of Alcohol on each of these organs.
6. Tell how to disinfect outhouses, yards where kitchen and other refuse has been deposited, or rooms in which fever patients have been confined.

PUBLIC SCHOOL LEAVING.

ARITHMETIC.

Time—Two hours.

1. The West bound passenger train running at an average speed of $22\frac{2}{145}$ miles per hour, including stoppages, leaves Brandon at 21.50 o'clock, and arrives at Moose Jaw on the following day at 9.55 o'clock. If Brandon is 132 miles from Winnipeg, find the distance of Moose Jaw from the latter place.
2. The product of two numbers is 9082009. If one of the numbers is 1009 find the product of the sum and difference of the two numbers.
3. A Statute Labour District has \$477 to expend on roadwork at the rate of \$4.75 per acre for ploughing and \$8.00 per mile for harrowing and rolling. How many miles of roadbed $1\frac{1}{4}$ rods wide can be made for the amount?
4. A dealer in Moosomin buys 12,000 bushels of oats by measure at 24c. per bushel. He sells them at Revelstoke at \$24.00 per ton after paying 40c. per cwt. for freight at their destination. The oats originally weighed 40 lbs. to the bushel, but when weighed at Revelstoke they were found to have lost $7\frac{1}{2}\%$ in weight. If the other expenses in connection with the transaction amounted to \$384 find the dealer's gain or loss per cent.
5. A merchant deposited a certain sum of money in a bank on July 1st. Had he left it there until the end of the year he would have received \$12 interest but as he drew out \$200 on Sept. 1st he received only \$10.
(a) What rate of interest did the Bank pay?
(b) What was the amount of the merchant's original deposit?
6. Two carpenters took the contract of building a bridge for \$1600.00. The material cost \$644.00 and the extra labour \$130.00. One of them

works 42 days of 8 hours each and $12\frac{1}{2}$ days of 10 hours each, the other works 30 days of 8 hours each and $12\frac{1}{2}$ days of 10 hours each. If they decide to divide the proceeds after paying for the material and labour, in proportion to the time each works, to what amount will each be entitled?

7. A corral 53 yds. 1 ft. long and 40 yds. wide is surrounded by a close board fence 5 ft. 6 in. high nailed to two rows of scantling. The lumber used is $1\frac{1}{2}$ inches thick and the scantling are 4 in. wide and 2 in. thick.

- (a) Find the value of the lumber in the fence at \$18 per M.
- (b) Find the area and circumference of the largest circular pen that may be made in the yard after providing for a 4 ft. path on each side.
- (c) Find the distance diagonally across the corral.

8. Find the value of 5 yards of lace if $12\frac{1}{2}$ metres cost $87\frac{1}{2}$ francs. 1 franc = 19.5 cents; 1 in. = .0254 metres.

PUBLIC SCHOOL LEAVING.

ALGEBRA AND GEOMETRY.

Time—Two hours.

1. Point out resemblances and differences between Algebra and Arithmetic.

- (a) In subject matter.
- (b) In notation.

2. John bought x marbles at 2 cents each, y balls at 10 cents each; and z tops at 15 cents each. Express the amount of money he paid out. What information is necessary to render this a purely arithmetical problem?

3. Distinguish between co-efficient and exponent. What are the corresponding terms in arithmetic? Find the product of $a^2 + a + 1$ into $a^2 - a + 1$. Of how many dimensions is each term of this product?

4. Find by multiplication the square of $a + b$. Use this result to write the square of $3a + 2b$; $a + b + c$; and $a - b$.

5. Solve $2x - [3 - \{4x + (x - 1)\} - 5] = 16$.

6. Find the value of a load of wheat, gross weight 5437 lbs., tare 1400 lbs. when 8 bushels cost as much less as 12 bushels cost more than \$6. Give reason for considering your solution an arithmetical or an algebraical solution.

7. Define vertical, horizontal, and parallel lines. Are lines which are vertical also parallel?

8. Through a given point draw a line parallel to a given line using only a compass, ruler and pencil. How many such lines can be drawn through the same point? Give reason.

9. (a) Draw a perpendicular at the extremity of a line without producing the line. Use only a compass, ruler, and pencil.

(b) Show how proposition (a) may be utilized in making the corners of the foundation of a building square.

10. Prove that the angles of any triangle are together equal to a straight angle. Determine in degrees the angles of an equilateral triangle and of an isosceles right triangle.

11. Show how the height of a steeple may be determined with the aid of a tape line and protractor.

12. What property of a parallelogram is laid down in the definition? Deduce the following properties:

(a) The opposite sides are equal.

(b) The opposite angles are equal.

(c) The diagonal bisects the parallelogram.

(d) The diagonals bisect each other.

APPENDIX "D"

Statistical Returns for 1896.

In the following tables the schools are, for purposes of greater clearness, classified thus:—Public Schools in which the majority of the rate-payers establishing them were Protestants are designated (a), (b), (c); in (d), (e) and (f) the majority were Roman Catholics. Protestant Separate Schools are designated (g) and (h) while (i), (j) and (k) represent Roman Catholic Separate Schools. Schools (a), (b), (d), (e), (g), (i) and (j) are open during the whole year. The other schools are open but part of each year. In (a), (c), (d), (f), (g), (h), (i) and (k) but one teacher is employed; in each of the other schools more than one teacher is employed.

I. Number of Schools in Operation and Number of Teachers Employed.

| Description of Schools. | Open Whole Year or Part of Year. | No. of Schools Employing One Teacher. | No. of Schools Employing more than one Teach'r. | Total No. of Teachers Employed. |
|--------------------------|----------------------------------|---------------------------------------|---|---------------------------------|
| (a) Public | Whole . . . | 80 | .... | 80 |
| (b) Public. | Whole . . . | .... | 22 | 79 |
| (c) Public. | Part | 227 | .... | 227 |
| (d) Public, R. C. . . . | Whole . . . | 20 | .... | 20 |
| (e) Public, R. C. . . . | Whole . . . | .... | 2 | 5 |
| (f) Public, R. C. . . . | Part | 6 | .... | 6 |
| (g) Separate, P. | Whole . . . | 1 | .... | 1 |
| (h) Separate, P. | Part | 1 | .... | 1 |
| (i) Separate, P. | Whole . . . | 3 | .... | 3 |
| (j) Separate, R. C. . . | Whole . . . | .... | 3 | 10 |
| (k) Separate, R. C. . . | Part | 1 | .... | 1 |
| Total | 366 | 339 | 27 | 433 |

II. Enrollment and Attendance.

| DESCRIPTION OF SCHOOLS. | PUPILS' ENROLLMENT. | | | Average Daily Attendance. | Average Enrollment for each Teacher. | Average Attendance for each Teacher. | Total No. days Schools open. | | |
|-------------------------|---------------------|--------|--------|---------------------------|--------------------------------------|--------------------------------------|------------------------------|---------|----------|
| | Boys. | Girls. | Total. | | | | Highest. | Lowest. | Average. |
| (a) Public..... | 1426 | 1281 | 2707 | 1275.84 | 34 | 16 | 219 | 168 | 210½ |
| (b) Public..... | 2051 | 2001 | 4052 | 2251.98 | 51.3 | 28.5 | 226 | 172½ | 211 |
| (c) Public..... | 2274 | 2140 | 4414 | 2492.98 | 19.5 | 11 | 210 | 38 | 127 |
| (d) Public, R. C..... | 309 | 251 | 561 | 295.87 | 28 | 14.8 | 219 | 52 | 115 |
| (e) Public, R. C..... | 158 | 141 | 299 | 189.43 | 60 | 37.88 | 216 | 205 | 210½ |
| (f) Public, R. C..... | 67 | 46 | 113 | 70.86 | 19 | 11.81 | 136 | 11 | 78 |
| (g) Separate, P..... | 11 | 10 | 21 | 11.90 | 21 | 11.9 | .... | .... | 216½ |
| (h) Separate, P..... | 13 | 11 | 24 | 14 | 24 | 14 | .... | .... | 102 |
| (i) Separate, R. C..... | 68 | 78 | 146 | 74.51 | 48.3 | 24.83 | 216 | 185 | 201 |
| (j) Separate, R. C..... | 188 | 246 | 434 | 246.63 | 43.4 | 24.66 | 217 | 214 | 215 |
| (k) Separate, R. C..... | 12 | 14 | 26 | 14 | 26 | 14 | .... | .... | 81 |
| Total | 6577 | 6219 | 12796 | 6938 | | | | | |

Classification.

Owing to varying dates of promotions, duplication of names and defects in Returns it has not been found possible to give with any degree of exactness the total number of pupils in each Standard for this year. The Returns for the December quarter are reasonably accurate and it is believed that the classification shown in the following table represents proportionately that for the year.

III. Classification of Pupils in December Quarter.

| DESCRIPTION OF SCHOOLS. | NUMBER OF PUPILS IN EACH STANDARD. | | | | | | | |
|-------------------------|------------------------------------|------|------|-----|-----|-----|-----|------|
| | I | II | III | IV | V | VI | VII | VIII |
| (a) Public..... | 709 | 392 | 501 | 178 | 76 | 7 | 1 | |
| (b) Public..... | 1096 | 560 | 775 | 277 | 163 | 118 | 38 | 5 |
| (c) Public..... | 1521 | 759 | 786 | 173 | 45 | 1 | | |
| (d) Public, R.C..... | 255 | 104 | 62 | 3 | 1 | | | |
| (e) Public, R.C..... | 142 | 90 | 17 | 8 | 2 | | | |
| (f) Public, R.C..... | 69 | 6 | 8 | | | | | |
| (g) Separate, P..... | 4 | 4 | 5 | | | | | |
| (h) Separate, P..... | 19 | 5 | | | | | | |
| (i) Separate, R.C.... | 76 | 23 | 23 | 2 | 5 | | | |
| (j) Separate, R.C.... | 137 | 75 | 52 | 45 | 5 | | | |
| (k) Separate, R.C.... | 11 | 5 | 3 | | | | | |
| Total | 4029 | 2023 | 2232 | 686 | 297 | 126 | 39 | 5 |

IV. Cost of Tuition.

| Description of Schools. | Amount paid in Salaries. | Average Salary. | Cost per Pupil enrolled. | Cost per Pupil in average attendance. |
|-------------------------|--------------------------|-----------------|--------------------------|---------------------------------------|
| (a) Public..... | \$ 42546 50 | \$ 531 83 | \$ 15 71 | \$ 33 34 |
| (b) Public..... | 51491 00 | 651 78 | 12 70 | 22 86 |
| (c) Public..... | 58144 73 | 256 14 | 13 17 | 23 32 |
| (d) Public, R.C..... | 7591 50 | 379 57 | 13 56 | 25 64 |
| (e) Public, R.C..... | 2920 00 | 584 00 | 9 76 | 15 41 |
| (f) Public, R.C..... | 980 40 | 163 40 | 8 67 | 13 80 |
| (g) Separate, P..... | 575 00 | 575 00 | 27 38 | 48 32 |
| (h) Separate, P..... | 150 00 | 150 00 | 6 25 | 10 71 |
| (i) Separate, R.C..... | 1672 50 | 557 50 | 14 26 | 22 47 |
| (j) Separate, R.C..... | 6400 00 | 640 00 | 14 74 | 25 91 |
| (k) Separate, R.C..... | 135 00 | 135 00 | 5 19 | 9 64 |

V. Teachers. Certificates. Salaries.

| Class of Certificate. | Schools open whole year. | | | | Schools open part of year. | | | |
|--------------------------|--------------------------|------------------------|---------|----------|----------------------------|---------------------|---------|----------|
| | No. of Teachers. | Salaries per month. | | | No. of Teachers. | Salaries per month. | | |
| | | Highest. | Lowest. | Average. | | Highest. | Lowest. | Average. |
| First (Men) | 42 | \$108 33 $\frac{1}{3}$ | \$35 00 | \$63 88 | 20 | \$ 50 00 | \$35 00 | \$42 61 |
| First (Women) | 26 | 75 00 | 33 33 | 49 31 | 8 | 45 00 | 30 00 | 40 87 |
| Second (Men) | 51 | 75 00 | 39 58 | 46 48 | 47 | 50 00 | 35 00 | 41 06 |
| Second (Women) | 54 | 66 66 | 33 00 | 43 60 | 55 | 45 00 | 35 00 | 39 21 |
| Third (Men) | 8 | 45 00 | 35 00 | 38 28 | 43 | 45 00 | 30 00 | 37 50 |
| Third (Women) | 17 | 40 00 | 25 00 | 36 35 | 61 | 45 00 | 30 00 | 36 46 |
| Kindergartner | 1 | 50 00 | | | | | | |

VI. Summary of Normal School Sessions.

| Year. | Place. | Length of Session. | No. Candidates attending. Class of Certificate. | | |
|------------------------|--------|--------------------|---|-----|-----|
| | | | 1st | 2nd | 3rd |
| 1890 Moosomin | | April 8 | 0 | 1 | 6 |
| 1890 Moosomin | | Nov. 17—Dec. 23 | 0 | 0 | 6 |
| 1891 No session | | | | | |
| 1892 Moosomin | | Jan. 4—March 1. | 0 | 8 | 8 |
| 1892 Regina | | Jan. 4—March 24 | 0 | 9 | 0 |
| 1892 Regina | | Jan. 4—Feb. 22 . | 0 | 0 | 8 |
| 1893 Moosomin | | Jan. 4—March 31 | 0 | 5 | 0 |
| 1893 Moosomin | | Jan. 4—Feb. 13 . | 0 | 0 | 4 |
| 1893 Regina | | Jan. 4—March 31 | 1 | 3 | 0 |
| 1893 Regina | | Jan. 4—Feb. 13 . | 0 | 0 | 5 |
| 1893 Regina | | Oct. 2—Dec. 22 . | 18 | 35 | 0 |
| 1894 Regina | | Jan. 2—March 15 | 0 | 0 | 27 |
| 1894 Calgary | | Jan. 2—March 15 | 0 | 10 | 0 |
| 1894 Regina | | Sept. 1—Dec. 22 . | 5 | 22 | 0 |
| 1895 Moosomin | | Jan. 2—March 15 | 0 | 0 | 12 |
| 1895 Calgary | | Jan. 2—March 15 | 0 | 0 | 6 |
| 1895 Regina | | Sept. 1—Dec. 22 . | 9 | 13 | 0 |
| 1896 Regina | | Jan. 2—March 15 | 0 | 0 | 15 |
| 1896 Regina | | Sept. 1—Dec. 22 . | 7 | 16 | 0 |

VII. Summary of Examinations.

| YEAR. | Promot'n. III to IV. | | Entrance IV to V. | | TEACHERS. | | | | Cost. |
|--------------|--------------------------------|------------------------------|--------------------------------|------------------------------|--------------------------------|----------------------------------|-----------------------------------|----------------------------------|-----------|
| | No. of Candidates Examined. | No. of Candidates Passed. | No. of Candidates Examined. | No. of Candidates Passed. | No. of Candidates Examined. | No. who received Third Class. | No. who received Second Class. | No. who received First Class. | |
| 1888 (Feb.) | ..... | ..... | ..... | ..... | 67 | 32 | 9 | 1 | \$ 667 25 |
| 1888 (Aug.) | ..... | ..... | ..... | ..... | 75 | 26 | 5 | 7 | 702 28 |
| 1889 | ..... | ..... | ..... | ..... | 125 | 69 | 19 | 7 | 761 26 |
| 1890 | ..... | ..... | 128 | 77 | 129 | 51 | 26 | 9 | 1594 11 |
| 1891 | ..... | ..... | 115 | 79 | 126 | 24 | 39 | 8 | 1574 45 |
| 1892 | 848 | * | 389 | 195 | 156 | 46 | 26 | 6 | 1025 54† |
| 1893 | 433 | 103 | 331 | 109 | 245 | 96 | 46 | 10 | 1399 97 |
| 1893 (Sept.) | 141 | 54 | ..... | ..... | ..... | .. | .. | .. | 1783 82 |
| 1894 | 553 | 79 | 378 | 178 | 214 | 23 | 12 | 1 | |
| 1894 (Sept.) | 220 | 80 | ..... | ..... | ..... | .. | .. | .. | 2512 70 |
| 1895 | 572 | 203 | 325 | 128 | 193 | 40 | 11 | 3 | |
| 1895 (Sept.) | 214 | 80 | ..... | ..... | ..... | .. | .. | .. | 2139 68 |
| 1896 | 537 | 166 | 394 | 192 | 197 | 80 | 10 | 1 | |
| 1896 (Sept.) | 169 | 75 | ..... | ..... | ..... | .. | .. | .. |  |

* No record. The Council furnished the papers so as to have a uniform standard and the teachers examined the pupils' answer papers.

† In 1893-1896 there were two Promotion Examinations, one in June for schools open during the whole year, and one in September for schools open during a part of the year.

† In 1892 the Inspectors acted as sub-examiners, hence the decreased cost.

VIII. Summary of School Debenture Indebtedness.

| | | | |
|---|------|-----------|--------------|
| Debentures authorized during..... | 1886 | \$8150 00 | |
| | 1887 | 3200 00 | |
| | 1888 | 15900 00 | |
| | 1889 | 29850 00 | |
| | 1890 | 29050 00 | |
| | 1891 | 19025 00 | |
| | 1892 | 17800 00 | |
| | 1893 | 26975 00 | |
| | 1894 | 27475 00 | |
| | 1895 | 44725 00 | |
| | 1896 | 33500 00 | |
| | | | \$ 255650 00 |
| Debentures maturing during..... | 1892 | 150 00 | |
| | 1893 | 980 00 | |
| | 1894 | 1280 00 | |
| | 1895 | 1080 00 | |
| | 1896 | 11205 00 | |
| | 1897 | 4830 00 | |
| | 1898 | 11455 00 | |
| | 1899 | 14180 00 | |
| | 1900 | 19955 00 | |
| | 1901 | 15630 00 | |
| | 1902 | 11130 00 | |
| | 1903 | 12675 00 | |
| | 1904 | 15050 00 | |
| | 1905 | 7850 00 | |
| | 1906 | 12900 00 | |
| | 1907 | 400 00 | |
| | 1908 | 4800 00 | |
| | 1909 | 19000 00 | |
| | 1910 | 15200 00 | |
| | 1911 | 6550 00 | |
| | 1912 | 2000 00 | |
| | 1913 | 11200 00 | |
| | 1914 | 6200 00 | |
| | 1915 | 32000 00 | |
| | 1916 | 11900 00 | |
| Debentures authorized but not registered... | | 6050 00 | |
| | | | \$ 255650 00 |



